ETERLEY, Nikolay Semenovich; GANELIN, A.M., nauchnyy red.; CHIRKOV, A.Ye., nauchnyy red.; VINOKUR, I.Ye., red.; NESMYSLOVA, L.M., tekhn. red.

[Electric power plants, substations, lines, and power-distribution networks] Elektricheskie stantsii, podstantsii, linii i seti. Moskva, Proftekhizdat, 1962. 239 p. (MIRA 16:2)

(Electric power distribution)
(Electric power plants)

ETELMAN, A., kand.khim.nauk

Semiconductor as heater. Mest.prom.i khud.promys. 3 no.1:28-29 Ja '62. (MIRA 15:2)

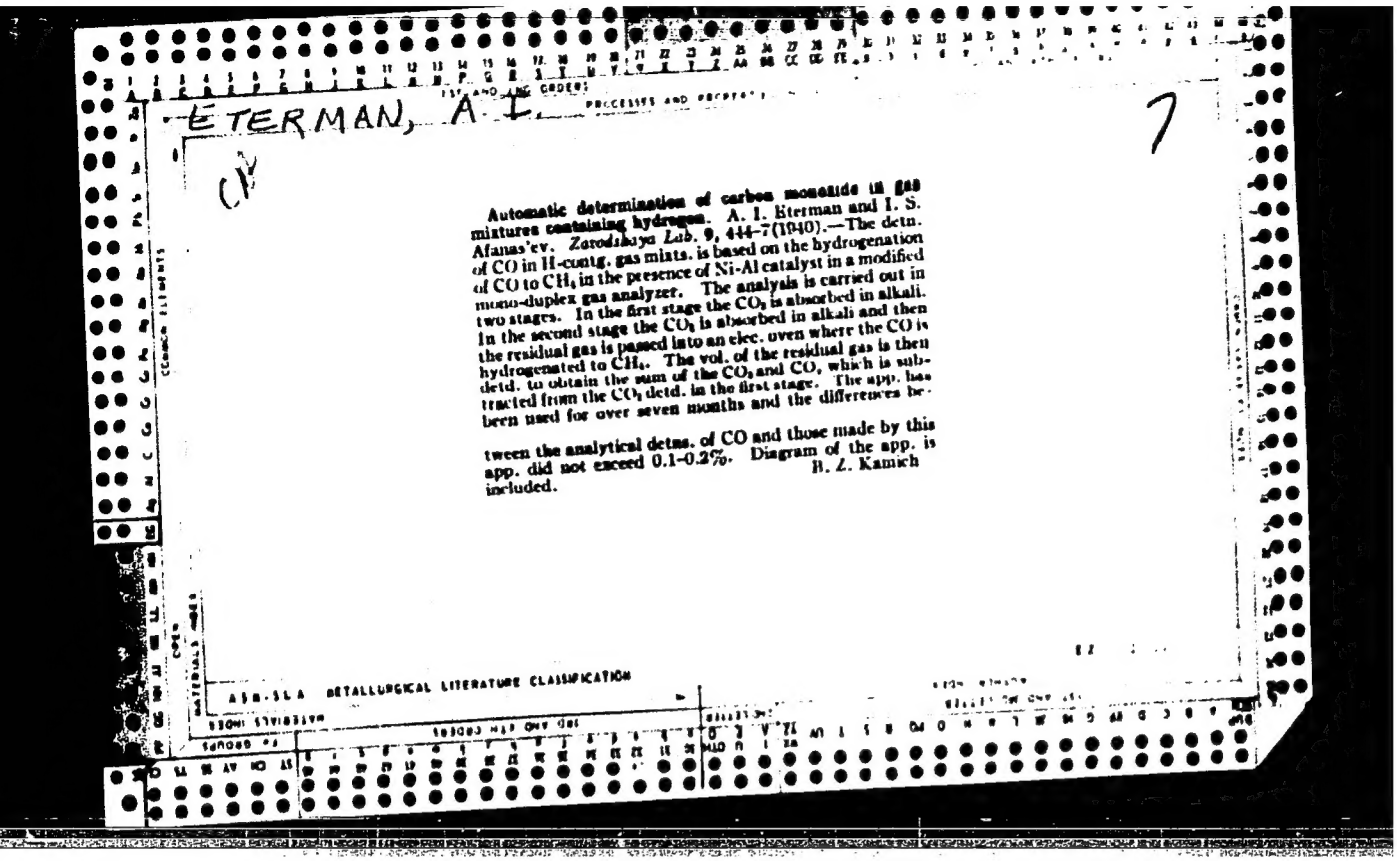
(Semiconductors)
(Pressing of garments)

ETERMAN, A.I., kand. khimicheskikh nauk; LEYBMAN, Ye.Ya., mladshiy nauchnyy sotrudnik; LEYBMAN, S. Ya., inzh.

Heating of garment pressing systems by means of ferrosilicon semiconductor plates. Nauch.-issl. trudy TSNIISHpromeloproma no.11: 85-107 '62 (MIRA 17:7)

ETERMAN, A.I., kand. khimicheskikh nauk; LEYBMAN, Ye.Ya., mladshiy nauchnyy sotrudnik

Heating of garment pressing equipment by means of current-conducting films. Nauch.-issl. trudy TSNIIShveiproma no.12:79-85 '63. (MIRA 17:9)



ETERMAN, A. I.

7

Automatic determination of carbon monoxide in gas mixtures containing hydrogen. A. I. Eterman and I. S. Afanas'ev. *Zavodskaya Lab.* 9, 444–7(1940).—The detn. of CO in H-contg. gas mixts. is based on the hydrogenation of CO to CH_4 in the presence of Ni-Al catalyst in a modified mono-duplex gas analyzer. The analysis is carried out in two stages. In the first stage the CO_2 is absorbed in alkali. In the second stage the CO_2 is absorbed in alkali and then the residual gas is passed into an elec. oven where the CO is hydrogenated to CH_4. The vol. of the residual gas is then detd. to obtain the sum of the CO_2 and CO, which is subtracted from the CO_2 detd. in the first stage. The app. has been used for over seven months and the differences between the analytical detns. of CO and those made by this app. did not exceed 0.1–0.2%. Diagram of the app. is included.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ETERMAN, A.I.

D'YACHENKO, P.Ye., doktor tekhnicheskikh nauk; D'YACHKOV, A.K., doktor tekhnicheskikh nauk, redaktor; ETERMAN, A.I., redaktor; MAKUNI, Ye.V., tekhnicheskiy redaktor.
[Radioactive isotopes in machine building] Radioaktivnye izotopy v mashinostroenii. Moskva, Izd-vo Akademii nauk SSSR, 1956. 50 p. (MLRA 9:6)
(Radioisotopes--Industrial applications)(Physical metallurgy)
(Machinery industry)

SOV/58-59-7-15192

Translation From: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 86 (USSR)

AUTHORS: Eterman, A.I., Kurbatova, N M.

TITLE: Study of the Physico-Chemical Properties of New Organic Heat-Transfer Agents

PERIODICAL: Sb. nauchn. rabot. Tsentr. Konstrukt. byuro torg. mashinostr. Upr. torg. oborud. M-va torg. USSR, 1958, Nr 2, pp 104 - 115

ABSTRACT: The article has not been reviewed.

Card 1/1

ETERMAN, A.

Synthetic polymer materials. Sov. torg. no.8:20-24 Ag '58.
(Synthetic products) (MIRA 11:9)

ETERMAN, A.I.

KA-150 potato peeler with replaceable abrasive facing. Kons. i ov. prom. 13 no.4:17-19 Ap '58. (MIRA 11:4)

1. TSentral'noye konstruktorskoye byuro torgovogo mashinostroyeniya. (Potatoes) (Food industry--Equipment and supplies)

5(4)

AUTHORS: Eterman, A. I. and Kurbatova, N. M. SOV/76-32-12-23/32

TITLE: The Physico-Chemical Properties of Some Hydrocarbons of the Diphenyl Methane Series (Fiziko-khimicheskiye svoystva nekotorykh uglevodorodov difenilmetanovogo ryada)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2803-2809 (USSR)

ABSTRACT: Among the liquid diaryl methanes suggested by I. G. Matveyev, N. I. Gel'perin, D. A. Drapkina and others (Ref 1) as heat transferring agents of high temperature stability there are ditolyl methane and dicumyl methane. Investigations were made of their surface stresses, viscosities and densities as well as of the dependence of these values of temperatures between 20° and 250° C. Furthermore, the relation between surface stress and molecular volume was established. The results were interpreted according to the theory of absolute reaction velocities. The activating energy values and the variations of the activating entropy of the dynamic viscosity were calculated. The results were: 1. surface stress and density show a linear decrease with rising temperatures, 2. between 20° and 100° C, viscosity sinks

Card 1/2

rapidly, then the curve flattens out, 3. there is a relation between density and surface tension of non-associated liquids according to A. I. Bachinskiy's formula (Ref 10):

$$\frac{M(\gamma)^{\frac{1}{2}}}{D} = P = \text{const.}$$

M - surface stress, D - density, γ - molecular weight, P - a quantity independent of temperature, the parachor introduced by Segden Professor I. R. Krichevskiy helped with suggestions. There are 4 figures, 6 tables, and 10 references, 9 of which are Soviet.

SUBMITTED: June 12, 1957

Card 2/2

ETERMAN, A.I.; KUKBATOVA, N.M.

Magnetic treatment of water. Shvein.prom. no.3:20-22 My-Je '59.
(MIRA 12:9)

(Feed-water purification)

FRANKL', F. I., and I. I. ETERMAN

Obtekanie tel, blizhikh k prodolgovatym ellipsoidam vrashcheniia. (Prikladnaia matematika i mekhanika, 1944, v. 8, no. 1, p. 65-69)

Summary in English;

Title re.: Stremline flow around a body approaching an oblong ellipsoid of revolution.

QA801.P7 1944

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

ETERMAN, I. L.

3401

Eterman, I. I. Distribution of pressure over the surface of a body of revolution in a gas flow of high subsonic velocity. Appl. Math. Mech. [Akad. Nauk SSSR. Prikl. Mat. Mech.] 11, 363–370 (1947). (Russian. English summary)

The author describes computational procedures which may be used in applying Christianovitch's approximate method for constructing rotationally symmetrical subsonic flows past bodies of revolution [Trudy Central. Aero-Gidrodinam. Inst., no. 481 (1940); these Rev. 7, 39]. As an example he computes the pressure-distribution on an ellipsoid of revolution with axes-ratio .215 for the stream Mach number .927.

L. Bers (Syracuse, N. Y.).

Source: Mathematical Reviews, Vol 9 No. 9

ETERMAN, I. I.

1 May 1947

USSR/Aerodynamics

"Determination of the Surface of a Body of Rotation with a Given Determined Pressure," I I Eterman, 4 pp

"Dok Akad Nauk USSR Nov Ser" Vol LVI, No 4

1T100

ETERMAN, I. I.

Pressure distribution on bodies of revolution in high subsonic gas flows. Providence, R. I., 1949. 17 p., illus. (Brown University. Graduate Division of Applied Mathematics. Translation no. A9-T-41).

Trans. of Raspredelenie davleniia po telam vrashcheniia pri obtekanii gazom s bol'shimi dozvukovymi skorostiami.

NNIAS RPB

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

USSR/Automatics and telemechanics - Characteristic equations FD-3084

Card 1/1 Pub. 10 - 7/8

Author : Eterman, I. I.; Obuvalin, M. I. (Moscow)

Title : Method for solving characteristic equations on electrical modeling devices

Periodical : Avtom. i telem., Vol. 16, Nov-Dec 1955, 554-555

Abstract : The author proposes a method for solving equations of the type $p^n+a_{n-1}p^{n-1}+\cdots+a_1p+a_0 = 0$, which is characteristic for a given system of regulation. The method has been tested in practice and found to give positive results. The principal idea of the proposed method is the determination of the roots by means of the fixation on a continuous working principle of the transition from stable regime to unstable regime. For such a working principle one can utilize any electrical model constructed on the basis of d-c amplifiers with large coefficient of amplification and with substantial feedback. The author notes that such models have been reported on in detail in the literature, e.g. ibid., No 2, 1953, 164-176. The mentioned transition leads to exponential increase of output voltage and its rapid output beyond the limits of the scales of the measuring devices.

Submitted : December 18, 1953

ETERMAN, I. I., CAnd. in Phys. Math. Sci.

"Features of Programming with the "Ural" Machine" a paper presented at the Conference on Methods of Development of Soviet Mathematical Machine-Building and Instrument-Building, 12-17 March 1956.

Translation No. 596, 8 Oct 56

ETERMAN, I.I.; GORCHINSKAYA, T.D.; KARAVASHKINA, G.I.

Solving mathematical problems on the universal digital computer "Ural". Priborostroenie no.5:1-8 My '56. (MLRA 9:8)
(Electronic calculating machines)

[illegible] and OBUVALIN, M. I.

"On the Solution of Boundary Problems on Continuous Action Devices Intended for the Solution of Cauchy's Problem," by M. I. Obuvalin and I. I. Eterman, Moscow, Inzhenernyy Sbornik, Vol 23, 1956, pp 203-213, submitted for publication 19 Jul 54

Two complementary methods of the solution of boundary problems of mathematical physics and the application of the solution of linear algebraic systems are presented. Examples of the application of the proposed methods to concrete problems are given. The MPT-9 analog computer was used in the computations.

The solution of a great number of technical problems pertaining to boundary problems of the theory of elasticity, the theory of oscillations, and hydromechanics shows the effectiveness of the methods developed and the expediency of their application in many cases.

The aim of this work is a search for solution methods which may be used on analog computers, intended for the solution of Cauchy's problem and of boundary problems pertaining to equations of the type

$$a_n y^{(n)} + a_{n-1} y^{(n-1)} + \ldots + a_1 y^{(1)} + a_0 y = f$$

The basic results of this work were presented on 28 November at the Second All-Union Conference on Automatic Control by I. I. Eterman of the SKB (Special Design Bureau) of the Ministry of Machine Building.

PHASE I BOOK EXPLOITATION

Eterman, Izrail' Isayevich

Matematicheskiye mashiny nepreryvnogo deystviya (Mathematical Analog Computers) Moscow, Mashgiz, 1957. 234 p. 7,500 copies printed.

Reviewer: Kobrinskiy, N. Ye., Professor; Ed.: Solodov, A. V., Candidate of Technical Sciences; Tech. Ed.: El'kind, V. D.; Ed. of Publishing House: Kochetova, G. F.; Managing Ed. for literature on machine building and tool making: Pokrovskiy, N. V.

PURPOSE: This book is addressed to scientific workers and to engineers who use analog computers in their work. It can also serve as a textbook on the subject for students of science and technology enrolled in vuzes.

COVERAGE: The monograph explains the theory of analog computers. The various kinds of problems which can be solved on these machines and ways of checking the correctness of the solutions are discussed. The author reviews the development of calculating instruments and machines. He enumerates the three classes of calculating machines: analog computers, discrete action

Card 1/5

Mathematical Analog Computers

TABLE OF CONTENTS:

Card 3/5

ETERMAN, Izrail' Isayevich

Analogue computers. New York, London, Pergamon Press, 1960.
Ix, 264 p. illus., diagrs., tables.
Transla ed from the original Russian: Matematicheskiye mashiny nepreryvnogo deystviya, Moscow, 1957.
Bibliography: p. 262-264

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S/140/62/000/003/007/007
C111/C333

AUTHOR: Eterman, I. I.

TITLE: Polynomials of the best approximation and some of their applications

PERIODICAL: Vysshiye uchebnyye zavedeniya. Izvestiya. Matematika, no. 3, 1962, 189-194

TEXT: To determine the polynomial

$P_n(x) = \sum_{i=0}^{n} c_i x^i$ which best approximates the continuous function $f(x)$ on $0 \leq x \leq 1$, one generally uses a system of order $(2n+4)$ with the unknowns $c_0, c_1, \ldots, c_n; \xi_1, \xi_2, \ldots, \xi_{n+2}; E_n$, where $E_n = \max | f(x) - P_n(x) |$ and ξ_i are those points where E_n is attained. The author shows that one can reduce the order of the system to n+2 by determining ξ_1 from the system

Card 1/4

Polynomials of the best . . .

$$\Phi_s(\xi_1, \ldots, \xi_{n+2}) = \begin{vmatrix} f(\xi_1) - \gamma E_n & 1 & \xi_1 & \xi_1^2 & \ldots & \xi_1^n \\ f(\xi_2) + \gamma E_n & 1 & \xi_2 & \xi_2^2 & \ldots & \xi_2^n \\ \ldots & & & & & \\ f(\xi_{s-1}) + (-1)^{s-1}\gamma E_n & 1 & \xi_{s-1} & \xi_{s-1}^2 & \ldots & \xi_{s-1}^n \\ f'(\xi_s) & 0 & 1 & 2\xi_s & \ldots & n\xi_s^{n-1} \\ f(\xi_{s+1}) + (-1)^{s+1}\gamma E_n & 1 & \xi_{s+1} & \xi_{s+1}^2 & \ldots & \xi_{s+1}^n \\ \ldots & & & & & \\ f(\xi_{n+2}) + (-1)^{n+2}\gamma E_n & 1 & \xi_{n+2} & \xi_{n+2}^2 & \ldots & \xi_{n+2}^n \end{vmatrix} = 0. \quad (5)$$

$(s = 1, 2, \ldots, n+2)$

where

$$\gamma E_n = \frac{1}{E} \sum_{i=1}^{n+2} (-1)^{i+1} \cdot s(i)\, f(\xi_i) \quad (6)$$

Card 2/4

Polynomials of the best . . .

$$E = \sum_{i=1}^{n+2} S(i), \quad S(i) = w(\xi_1, \xi_2, \ldots, \xi_{i-1}, \xi_{i+1}, \ldots, \xi_{n+2}) \quad (7)$$

and $w(\xi_1, \xi_2, \ldots, \xi_{n+2})$ is the Vandermond determinant. For c_i then the formula

$$c_i = \frac{1}{E} \Delta_i \quad (i=0, 1, .., n) \quad (8)$$

holds, where Δ_i arises from w by replacing the i-th column with the column $\begin{bmatrix} f(\xi_1) \\ \vdots \\ f(\xi_{n+2}) \end{bmatrix}$. The author states without proof that with large n one can replace the solution of (5) with a simpler approximate solution that leads to polynomials Q_n, which are only slightly different from P_n.

Card 3/4

Polynomials of the best . . .

Again without proof, the author mentions the possibility, among others, of using the polynomials Q_n to obtain good difference schemes for the differential equation

$$\frac{dy}{dx} = f(x,y) . \qquad (15)$$

The scheme

$$y_{k+4} = y_k + \frac{h}{3}(y'_k + y'_{k+4}) + \frac{5}{3}h\left\{y'\left[x_k + \frac{2(5-\sqrt{5})}{5}h\right] + y'\left[x_k + \frac{2(5+\sqrt{5})}{5}h\right]\right\} \qquad (16)$$

thus obtained has, for example, the remainder $\frac{h^7}{300}\frac{f_k^{(7)}}{7!}$.

ASSOCIATION: Penzenskiy politekhnicheskiy institut (Penza Polytechnic Institute)

SUBMITTED: November 9, 1959

Card 4/4

S/140/62/000/006/006/006
E031/E435

AUTHOR: Eterman, I.I.

TITLE: Approximations to functions by asymptotic polynomials

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika. no.6, 1962, 162-171

TEXT: The author considers a function which is uniformly convergent in the closed interval $(-1, +1)$ and which can be expanded in a series of Chebyshev polynomials. It is assumed that the end points of the interval are among the nodal points over which the approximation to the function is to be constructed. A triangular matrix is constructed which corresponds to the asymptotic solution of the equations for the nodal points. A convenient asymptotic solution is based on the determination of values $\eta_k^{(n)} = \cos (k\pi)/(n+1)$ $(k = 1,2,\ldots,n)$. The triangular matrix defines so-called asymptotic polynomials built up from Chebyshev polynomials with the function values at the points $\eta_k^{(n)}$ as coefficients, which have the useful feature of providing an indication of the accuracy of the approximation. A bound is obtained for $|P_n(x) - Q_n(x)|$ where $P_n(x)$ is

ETERMAN, I.I.

Solution of the inverse problem in the theory of approximation of functions. Uch. zap. PPI no.1:3-9 '63.

Use of asymptotic polynomials in solving certain problems in applied mathematics. Ibid.:10-16 (MIRA 17:2)

L 45405-66 EWT(d)/T/EWP(1) IJP(c)

ACC NR: AR6016622 SOURCE CODE: UR/0044/65/000/012/B125/B126

AUTHOR: Eterman, I. I.

27
B

TITLE: Problem of approximate solution of integral and differential equations, ordinary and partial

SOURCE: Ref. zh. Matematika, Abs. 12B662

REF SOURCE: Uch. zap. Penzensk. politekhn. in-t, vyp. 1, 1964, 90-97

TOPIC TAGS: approximate solution, parabolic differential equation, elliptic differential equation

ABSTRACT: The author considers the asymptotic polynomials

$$Q_n(f, x)=\sum_{k=0}^{n+1} f_k \pi_k^{(n)}(x) \qquad (1)$$

with parameters of accuracy

$$L_n(f)=\frac{1}{2(n+1)}\left[f_0+(-1)^{n+1}f_{n+1}+2\sum_{k=1}^{n}(-1)^k f_k\right], \qquad (2)$$

where

$$\pi_k^{(n)}(x)=\begin{cases}\dfrac{T_n(x)-T_{n+1}(x)}{2(n+1)(1-x)} & \text{for } k=0,\\ (-1)^k\dfrac{T_n(x)-\eta_k T_{n+1}(x)}{(n+1)(\eta_k-x)} & \text{for } k=1,\ \ldots,\ n,\\ (-1)^n\dfrac{T_n(x)+T_{n+1}(x)}{2(n+1)(1+x)} & \text{for } k=n+1,\end{cases} \qquad (3)$$

UDC: 518

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ACC NR: AR6016622

$$\eta_k = \cos\frac{k\pi}{n+1}\ (k=0, 1, \ldots, n+1),\ f(\eta_k)=f_k,\ T_n(x)=$$

= cos n arc cos x, which is an efficient instrument for approximating functions $f(x) \in C(a,b)$. In previous work (RZhMat, 1963, 8B82; 1964, 4B647) the author studied applicability of asymptotic polynomials to the solution of problems in applied mathematics. In the form of an asymptotic polynomial he obtained an approximate solution of the Fredholm equation of type 2. The proposed method can be used for a wide class of nonlinear problems. By this method one can also approximately solve both Cauchy problems and multi-point boundary value problems for ordinary differential equations. Under the conditions

$$\varphi(-1, t)=u_1(t),\quad \varphi(1, t)=u_2(t),\quad \varphi(x, 0)=f(x)\ -1<x<1, \tag{4}$$

the parabolic equation

$$\frac{\partial^2\varphi}{\partial x^2}=F\left(\frac{\partial\varphi}{\partial x}, \frac{\partial\varphi}{\partial t}, \varphi, x, t\right) \tag{5}$$

can be approximately solved with the help of asymptotic aggregates. Boundary value problems for elliptic equations

$$\frac{\partial^2\varphi}{\partial x^2}+\frac{\partial^2\varphi}{\partial y^2}=\psi\left(\frac{\partial\varphi}{\partial x}, \frac{\partial\varphi}{\partial y}, \varphi, x, y\right) \tag{6}$$

are also solved analogously. Bibliography 5 titles. D. Topolyanskiy [Translation of abstract]

SUB CODE: 12

ACCESSION NR: AP4042545 S/0140/64/000/004/0169/0176

AUTHOR: Eterman, I. I. (Penza)

TITLE: Solution of two problems in applied mathematics by means of special approximating polynomials

SOURCE: IVUZ. Matematika, no. 4, 1964, 169-176

TOPIC TAGS: asymptotic polynomial, approximation polynomial, best approximation polynomial, transcendental equation solution, iterative method, quadrature formula

ABSTRACT: In an earlier series of articles the author introduced asymptotic polynomials

$$Q_n(x) = \sum_{k=0}^{n+1} f_k v_k^{(n)}(x),$$

where $v_k^{(n)}(x)$ represent certain expressions containing trigonometric functions, which were used for approximating the function $f(x)$. In

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ACCESSION NR: AP4042545

the present work these polynomials are used for the approximate solution of transcendental equations and the construction of a quadrature process. The method proposed for the solution of the transcendental equation $f(x) = 0$ consists in the approximation of the function $f(x)$ on the interval $[a, b]$ by the asymptotic polynomial $Q_2^{(1)}(x)$ and the approximate solution of the approximated equation $Q_2^{(1)}(x) = 0$. The root X_1 of this equation is the approximate solution of the transcendental equation. By taking the subinterval of the interval $[a, b]$, with the center at the point X_1 and the corresponding asymptotic polynomial $Q_2^{(2)}(x)$, the second approximation equation $Q_2^{(2)}(x) = 0$ is derived from which X_2 is solved. Continuing this iterative process, the sequence $X_1, X_2, \ldots X_n$ is established, and its convergence to the solution of the transcendental equation is proved. It is shown that the proposed iterative method is rapidly convergent and has a very simple calculation procedure. For the approximate integration of

$$\int_{-1}^{+1} f(x)\,dx,$$

Card 2/3

ACCESSION NR: AP4042545

the integrand is substituted by an asymptotic polynomial $Q_n(x)$, and the general quadrature formula is derived. It is proved that for every continuous function f(x), this formula is convergent, and the rate of convergence depends on the structural properties of the integrand. The estimate for the remainder term is derived. It is shown that the quadrature formula derived can be applied to obtain an interpolation formula for the numerical solution of the differential equation $dy/dx = \phi(x, y)$. Orig. art. has: 38 formulas.

ASSOCIATION: none

SUBMITTED: 220ct62	ATD PRESS: 3071	ENCL: 00
SUB CODE: MA	NO REF SOV: 005	OTHER: 000

Card 1 3/3

ACC NR: AP7009574 SOURCE CODE: UR/0140/66/000/006/0161/0169

AUTHOR: Eterman, I. I. (Penza)

ORG: none

TITLE: Approximate solution of differential and integral equations with the aid of asymptotic polynomials of the second kind

SOURCE: IVUZ. Matematika, no. 6, 1966, 161-169

TOPIC TAGS: polynomial, approximate solution, Fredholm equation, Volterra equation

SUB CODE: 12

ABSTRACT: Approximate solutions of intogral and differential equations are found in the form of asymptotic polynomials of the second kind. Convergence of the solutions to exact solutions with unlimited increase of the order n is proven. (This paper is as given at a Saratov University Conference on 21 Feb 1964, and an abbreviated version, without proofs, was published elsewhere.) It is shown that asymptotic polynomials of the first and second kind and their parameters are related by integral relations and that the parameters M_n possess characteristic properties. An integral, second-order Fredholm equation is examined, and it is proved that the asymptotic polynomial $R_n(x)$ approximates the solution $f(x)$ of this equation with any desired degree of accuracy. A linear differential equation is transformed into an integral second-order Volterra equation and then into the Fredholm equation. An asymptotic polynomial of the second kind is found for which the solution of the final equation converges uniformly to any desired degree of accuracy. An example is given of using the method for solving a class of boundary value and multipoint problems. Orig. art. has: 34 formulas. [JPRS: 40,050]

Card 1/1

UDC: 517.43

0930 1102

[redacted], I. M.

"Calculation method of the program of a milling machine."

Programmed Control of Metal Cutting Machines. report presented at All-Union Conference, Moscow, 13-16 Nov 1957

Vestnik Ak. Nauk SSSR, 1958, No. 2, pp. 113-115, (author Kobrinskiy, A. Ye.)

MIHALIK, Albin; ETESI, Jozsef

Engineers or technicians? Musz elet 19 no. 6:5 12 Mr '64.

1. Zipernovszky Karoly Gepipari Technikum, Pecs (for Mihalik)
2. Kando Oregdiakok Kore titkara, Budapest (for Etesi).

ACC NR: AP6026749 (A) SOURCE CODE: PO/0055/66/000/009/0257/0259

AUTHOR: Filipczynski, Leszek (Doctor; Engineer; Director); Luty, Waclaw (Dr.; Eng.); Etienne, Jerzy (Master Engineer)

/Filipczynski; Etienne/

ORG: Laboratory for the Passive Applications of Ultrasound of the Institute for the Investigation of Vibrations of the IPPT - Polish AS, Warsaw (Pracownia Biernych Zastosowan Ultradzwiekow Zakladu Badania Drgan IPPT-PAN) ; /Luty/ Institute of Precision Mechanics, Warsaw (Instytut mechaniki precyzyjnej)

TITLE: Testing fatigue strength by the ultrasound method

TOPIC TAGS: fatigue strength, fatigue test, ultrasound absorption, ultrasonics, ultransonic sensor , structural steel, bearing steel / 16H2N2MB structural steel, LH15 bearing steel

ABSTRACT: The article reports on tests carried out on type 16H2N2MB structural steel and on type LH15 quenched, low tempered bearing steel which had been smelted by two different processes: in an arc furnace and terminal deoxidation with the aid of Si and Al (normal steel) and as above but with vacuum deoxidation in the ladle with the aid of carbon dissolved in the steel before the addition of Si and Al (Vacuum deoxidized steel) in order to determine the effect of the smelting process on the fatigue strength during vibratory strength compression-stretching. The investigation was undertaken because the wider application of ultrasound methods using the high power and high vibration frequency (up to 23 kc) devices for this kind of testing developed and perfected at the Department for the Design of Prototypes of the Institute of Fundamental Technological Problems (Zaklad Konstrukcji Prototypow Instytutu Podstawowych Problemow) in Poland requires exhaustive testing to determine the effect of high

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ACC NR: AP6026749

vibration frequencies on fatigue strength. These new devices make it possible to shorten test time by 230 times. The comparative testing by the classical method of the steel samples mentioned above makes it possible to determine the scope of applicability of the ultrasound method to fatigue testing. Comparison of the test results in the case of the type Kh15 which were obtained by the ultrasound and conventional methods does not exhibit satisfactory agreement. Agreement between the results obtained by the two methods for the type 16Kh2N2MB steel is considered satisfactory within the limited scope of fatigue strength. Orig. art. has 7 figures and 1 table.

SUB CODE: 11,20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001/

Card 2/2

ACC NR: AP6026749 (A) SOURCE CODE: PO/0035/66/000/009/0257/0259

AUTHOR: Filipczynski, Leszek (Doctor; Engineer; Director); Luty, Waclaw (Dr.; Eng.); Etienne, Jerzy (Master Engineer)

ORG: Laboratory for the Passive Applications of Ultrasound of the Institute for the Investigation of Vibrations of the IPPT - Polish AS, Warsaw (Pracownia Biernych Zastosowan Ultradzwiekow Zakladu Badania Drgan IPPT-PAN) ; Luty - Institute of Precision Mechanics, Warsaw (Instytut mechaniki precyzyjnej)

TITLE: Testing fatigue strength by the ultrasound method

TOPIC TAGS: fatigue strength, fatigue test, ultrasound absorption, ultrasonics, ultransonic sensor , structural steel, bearing steel / 16H2N2MB structural steel, LH15 bearing steel

ABSTRACT: The article reports on tests carried out on type 16H2N2MB structural steel and on type LH15 quenched, low tempered bearing steel which had been smelted by two different processes: in an arc furnace and terminal deoxidation with the aid of Si and Al (normal steel) and as above but with vacuum deoxidation in the ladle with the aid of carbon dissolved in the steel before the addition of Si and Al (Vacuum deoxidized steel) in order to determine the effect of the smelting process on the fatigue strength during vibratory strength compression-stretching. The investigation was undertaken because the wider application of ultrasound methods using the high power and high vibration frequency (up to 23 kc) devices for this kind of testing developed and perfected at the Department for the Design of Prototypes of the Institute of Fundamental Technological Problems (Zaklad Konstrukcji Prototypow Instytutu Podstawowych Problemow) in Poland requires exhaustive testing to determine the effect of high

Card 1/2

ACC NR: AP6026749

vibration frequencies on fatigue strength. These new devices make it possible to shorten test time by 230 times. The comparative testing by the classical method of the steel samples mentioned above makes it possible to determine the scope of applicability of the ultrasound method to fatigue testing. Comparison of the test results in the case of the type IH15 which were obtained by the ultrasound and conventional methods does not exhibit satisfactory agreement. Agreement between the results obtained by the two methods for the type 16H2N2MB steel is considered satisfactory within the limited scope of fatigue strength. Orig. art. has 7 figures and 1 table.

SUB CODE: 11,20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001/

ETIGEN, L.Ye. (Dushanbe, 3, prospekt Lenina, 110, kv.24)

Possibility of using fluorescence microscopy for the study of the functional morphology of the ovary. Arkh. anat., gist. i embr. 44 no.6:80-86 Je '63. (MIRA 17:7)

1. Kafedra normal'noy anatomii (zav.-chlen-korrespondent AMN SSSR prof. D.A. Zhdanov) I Moskovskogo ordena Lenina meditsinskogo instituta i kafedra normal'noy anatomii (zav. chlen-korrespondent AN Tadzhikskoy SSR zasluzhennyy deyatel' nauki Ye.A. Rakhimov) Tadzhikskogo meditsinskogo instituta, Dushanbe.

PA76T28

ETIN, A. O.

Mar 1948

USSR/Engineering
Machines, Milling
Worms

"Profiling of Worm Miller for Finished Cylindrical Gears Prior to Shaving," A. O. Etin, Cand Tech Sci, M. D. Genkin, 5½ PP

"Stanki i Instrument" No 3

Describes processes performed for facilitating work of shaving a screw worm on various parts of machines to determine methods for more efficient clearing of the teeth of the shaver.

76T28

ETIN, A O.

AID P - 5037

Subject : USSR/Engineering

Card 1/1 Pub. 103 - 8/22

Authors : Etin, A. O. and E. S. Kovrigina

Title : Overlapping milling by multiple-thread milling cutters

Periodical : Stan. i instr., 4, 25-27, Ap 1956

Abstract : The authors describe the new more efficient method and equipment for the overlapping multiple-thread milling of small outside threading on automatic and semi-automatic machines. The new method has been developed by the Experimental Scientific Research Institute of Metal Cutting Machines (ENIMS). Seven drawings and 1 photo.

Institution : As above

Submitted : No date

S/121/60/000/008/002/012
A004/A002

Determining the Field of Application of Different Machining Methods

in the form of a continuous function of the parameters of the part surface to be machined (correlation of dimensions determining the surface shape and magnitude of allowance to be removed). Using the sole determination of the cutting parameters developed by ENIMS, it is possible to obtain comparable expressions of the average thickness of cut a_{av} for any machining method. If these expressions are substituted in the ordinary formulae of the basic technological time, the following function is obtained:

$$t_b = \frac{f(A)}{a_{av} v},$$

where A = dimensional parameters of the machined surface and some tool parameters. The author presents a number of examples for the derivation of similar functions, and of a comparative analysis of the most efficient machining methods under large-series and mass production conditions for threading operations, which are carried out either by hard alloy cutting tools, threading heads with inserted round or plane cutting dies or by disk cutters. Comparative graphs of these operations are given. There are 4 graphs and 3 Soviet references.

Card 2/2

ETIN, A.O.; GRACHEV, L.N.

Use of contour and multicut machining. Stan.i instr. 34 no.7: 1-7 Jl '63. (MIRA 16:9)

(Metal cutting)

ETIN, A.O., kand. tekhn. nauk; VLADZIYEVSKIY, A.P., doktor tekhn. nauk, prof., red.

[Kinematic analysis of the methods of metal cutting] Kinematicheskii analiz metodov obrabotki metallov rezaniem. Moskva, Izd-vo "Mashinostroenie," 1964. 321 p. (MIRA 17:5)

GLADKOV, B.A.; ETIN, A.O.; SHUMYATSKIY, B.L.

Determining the parameters of lathes. Stan. i instr. 35 no.3:27-33 Mr '64. (MIRA 17:5)

BARBARINA, T.M.; BUBYR', N.F.; BUTT, L.M.; VEL'SOVSKIY, V.N.; GORLOV, Yu.P.; GRIBANOVSKIY, V.G.; DROZDOV, I.Ya.; YEREMIN, I.A.; ZEZIN, V.G.; KEVESH, P.D.; KOCHAROV, E.P.; KOSYREVA, Z.S.; LEVIN, S.N.; MAKHNOVICH, A.T.; MERZLYAK, A.N.; RODOV, E.S.; ROZHNOV, A.I.; SEREBRYANSKAYA, B.I.; SUKHAREV, M.F.; USTENKO, A.A.; KHOMENKO, Z.S.; SHMIDT, L.M.; ETIN, A.O.; YAKHONTOVA, N.Ye.; KITAYTSEV, Vladimir Andreyevich, prof., doktor tekhn. nauk, red.; SKRAMTAYEV, B.G., glav. red.; TROKHIMOVSKAYA, I.P., zam. glav. red.; KRAVCHENKO, I.V., red.; KITAYGORODSKIY, I.I., red.; KRZHEMINSKIY, S.A., red.; ROKHVARGER, Ye.L., red.; BALAT'YEV, P.K. red.

[Manual on the manufacture of heat insulating and acoustical materials] Spravochnik po proizvodstvu teploizoliatsionnykh i akusticheskikh materialov. Moskva, Stroizdat, 1964. 524 p. (MIRA 18:1)

ETIN, A.O.; SHUMYATSKIY, B.L.

Analysis of the use of lathes with numerical program control. Stan. i instr. 36 no.4:3-8 Ap '65. (MIRA 18:5)

ETIN, G., inzhener.

Finishing pedestals and portals. Stroitel' no.3:2-3 Mr '57.
(MLRA 10:6)

1. Trest No.18 Ministerstva gorodskogo i sel'skogo stroitel'stva BSSR.

(Doorways) (Plastering)

ETIN, G., inzh.

[redacted]

Facing slabs imitating granite. Stroitel' no.1:26 Ja '58.
(Building blocks) (MIRA 11:2)

ETIN, G., inzh.

Floors made of polyvinyl chloride tiles. Zhil. stroi. no.12:21 '61. (MIRA 15:2)

(Ethylene) (Floor coverings)

SAGALOVICH, Iosif Aronovich, inzh.; LIBO, Vul'f Ziselevich, inzh.; KOPELEVICH, Aron Markovich, inzh.; ETIN, Gennadiy Yefimovich, inzh.; TERESHCHENKO, V., red.; KALECHITS, G., tekhn.red.

[Technological innovations in finishing operations] Novoe v tekhnologii otdelochnykh rabot. Minsk, Gos.izd-vo BSSR, Red. proizvodstvennoi lit-ry, 1960. 51 p. (MIRA 14:3)

1. Trest "Otdelstroy" No.7 Ministerstva stroitel'stva BSSR (for Sagalovich, Libo, Kopelevich, Etin).
(Building--Technological innovations)

ETIN, G., starshiy inzh.

New building materials. MIO 3 no.12:31 D '61. (MIRA 15:1)

1. Trest Otdelstroy No.7.
(Latex)

ETIN, G., inzh.

Facing walls with polystyrene tiles. Zhil.stroi. no.3:27 '62. (MIRA 15:9)
(Tiles)

ETIN, Gennadiy Yefimovich; GURIN, N., red.; VARENIKOVA, V.T., tekhn. red.

[Synthetic materials in the finishing of buildings] Sinteticheskie materialy v otdelke zdanii. Minsk, Gos.izd-vo BSSR. Red. proizvodstvennoi lit-ry, 1962. 44 p. (MIRA 16:4)

(Building materials)
(Finishes and finishing)

ROL'NIK, Mikhail Abramovich; ETIN, Iosif Zus'yevich; ASTAKHOV, A.V., red.izd-va; MINSKER, L.I., tekhn.red.

[Expert in mine communication] Master shakhtnoi sviazi. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 237 p. (MIRA 14:4)
(Mine communications)

ANDREYEV, V.I., inzh.; ETIN, I.Z., inzh.

Automatic forging with hydraulic presses. Mashinostroenie no.3:51-52 My-Je '65. (MIRA 18:6)

GRETSOV, V.L., dotsent; GLAVATSKIY, V.V., inzh.; ETIN, I.Z.

Investigating length of service, damage and basic indices of the reliability of mine telephone cables. Ugol' Ukr. 10 no.1: 26-28 Ja '66. (MIRA 18:12)

1. Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki (for Gretsov, Glavatskiy). 2. Nachal'nik svyazi kombinata Donetskugol' (for Etin).

ETIN, M.

USSR/Engineering Apr 48
Engines, Diesel - Starting
Engines, Diesel - Cold Weather Operating

"Starting Diesels at Low Temperatures," I. Stepanenko, M. Etin, Engineers, 1½ pp

"Avtomobil'" No 4

Chief difficulties in cold weather starting are: (1) air temperature at end of compression being too low; (2) viscous fuel causing poor atomization; (3) viscous lubricating oil making combustion difficult. Discusses heating air inlet, heating cylinder walls, decreasing fuel viscosity with tractor kerosene, using ether as a primer, heating crankcase oil, starting by towing.

6/49[illegible]5

ETIN, Il'ya Zinov'yevich; SHABADAKH, Askol'd Nikolayevich; POLONSKIY, Mikhail Vladimirovich; KAMNEV, P.V., red.; TELYASHOV, R.Kh., red.izd-va; BELOGUROVA, I.A., tekhn. red.

[Automation of forging processes and the measurement of forgings on forge presses with the help of radioisotopes] Avtomatizatsiia protsessov kovki i izmerenie pokovok na kovochnykh pressakh pri pomoshchi radioaktivnykh izotopov. Leningrad, 1963. 25 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Kovka i shtampovka, no.2) (MIRA 16:5)
(Forging) (Automation)
(Radioisotopes—Industrial applications)

L 26379-66

ACC NR: AP6007722 (N) SOURCE CODE: UR/0413/66/000/003/0133/0134

AUTHORS: Tsololo, A. P.; Etin, V. L.

12
B

ORG: none

TITLE: Cargo boat. Class 65, No. 178697

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 133-134

TOPIC TAGS: ship, marine engineering, cargo vehicle, river transport

ABSTRACT: This Author Certificate describes a cargo boat whose hull is equipped with several detachable cylindrical shell tanks for fluid loading. Rigidly fastened between the tanks are floor plates. The purpose of the equipment (see Fig. 1) is to avoid empty trips of the craft, to lower the materials cost of its construction, and to facilitate the scouring of tanks for removal of fluid laods. The middle shell tanks are constructed with a lesser diameter than that of the outboard tanks, and the latter support twin side decks. These, together with the deck of the second bottom on the floor plates and the walls of the outboard shells form a hold for dry loads.

2

Card 1/2 UDC: 629.123.563:629.12.011.173

L 26379-66
ACC NR: AP6007722

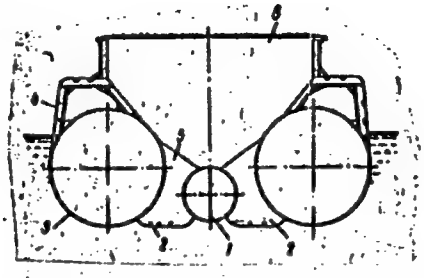

Fig. 1. 1 - center detachable cylindrical shell tanks; 2 - floor plates; 3 - outboard cylindrical shell tanks; 4 - twin side decks; 5 - deck of the second bottom on the floor plates; 6 - hold for dry loads.

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 30Jul63

Card 2/2

YABLOKOV, A.V.; ETIN, V.Ya.

Analysis of color variation in different populations of mammals, as exemplified by Greenland seal. Zool. zhur. 44 no.7:1023-1036 '65. (MIRA 18:9)

1. Institut morfologii zhivotnykh Akademii nauk SSSR, Moskva.

ETIN, Yuriy Benitsianovich; ZASORIN, V.I., red.

[Experience in the organization of work in using electronic computers] Opyt organizatsii raboty na elektronnykh vychislitel'nykh mashinakh. Leningrad, 1965. 15 p.
(MIRA 18:7)

BOROVSKIY, I.B.; PREDVODITOLOV, A.A.; TYAPUNINA, N.A.; ETINA, Ye.V.

Relation between impurity distribution and dislocations in cadmium crystals. Kristallografiia 7 no.4:600-603 Jl-Ag '62.
(MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet, Moskva.
(Dislocations in crystals)

AKIM, L.Ye.; KARPINSKIY, M.N.; ROMANENKO, V.A.; ETINA, Yu.Ya.

Changes of the functional groups of viscose cellulose in the process of its bleaching. Zhur.prikl.khim. 35 no.11:2534-2538 N '62. (MIRA 15:12)

(Cellulose) (Bleaching)

ETINBERG, E., kand.tekhn.nauk; PRINIMALA uchastiye Oganesyan, I.A., inzh.

Study of the hydraulic losses of adjustable blade hydraulic turbines. Energomashinostroenie 7 no.4:8-11 Ap '61.
(MIRA 14:7)

(Hydraulic turbines)

[redacted], I. A.

The application of the method of a A. F. Lesokhin for the computation of rotor blades of a rotation-blade hydraulic turbine and the determination of the cavitational efficiency fa tor. "Inzhinernyy Sbornik" by Academy of Science of the USSR, Department of Technical Sciences, Institute of Mechanics. 1955.

124-57-2-1917

Translation from Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 63 (USSR)

AUTHOR: Etinberg, I.E.

TITLE: The Influence of the Geometric Parameters of Runner Blades on the Cavitational Properties of a Variable-pitch-blade Hydraulic Turbine (Vliyaniye geometricheskikh parametrov lopastey rabochego kolesa na kavitatsionnyye kachestva povorotnolopastnoy gidroturbiny)

PERIODICAL: Gidroturbostroyeniye. Nr 1. Moscow-Leningrad, Mashgiz, 1955, pp 63-80

ABSTRACT: The results of theoretical calculations on the cavitational turbine parameter σ' (corresponding to the inception of cavitation) by means of the dependence of σ on the relative velocity of the flow past the rotor-blade profiles at the point of the lowest pressure. The value of the relative velocity was calculated by the method of A.F. Lesokhin (ref. RZhMekh, 1954, 4781) which permits the determination of the velocity distribution on the blade profile from certain given quantities, namely, the lifting force, the geometric parameters of the profile and the cascade, and the kinematic conditions of the flow. The effect of the cascade density l/t on σ

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124-57-2-1917

The Influence of the Geometric Parameters of Runner Blades (cont.)

is indicated, and it is observed that, starting from $\ell/t \leq 1$ a sharp increase in σ occurs. On the basis of the relationship shown on the graph $\sigma(\ell/t)$, recommendations are offered on the design of blades for variable-pitch blade turbines for smallest possible σ. The problem of the limiting, minimal σ is analyzed. As a result of an analysis of the effect of the profile camber on σ, and in order to prevent cavitation, it is recommended that the minimal camber be located closer to the leading edge of the blade profile and that profiles of small camber be employed. From sample calculations of σ on several cascades comprising profiles with different maximum-thickness locations, it is recommended that profiles be used in which the maximum thickness is located at a chordwise distance of 33 to 40 percent from the leading edge.

K.K.Shal'nev

1. Turbines--Cavitation 2. Turbines--Mathematical analysis

Card 2/2

ETINREC/IE

3347. Etinberg, L. E., Application of Lezokhin's method for designing of Kaplan turbine vanes and computation of the cavitation parameter σ (in Russian), *Izvestiya. Sbornik. Akad. Nauk SSSR* 21, 163–170, 1955.

The basis of the method is the assumption that (1) the flow in the runner of a Kaplan turbine does not show any radial component of speed, and (2) that the flow around the vanes in each cylindrical section of the runner is equal to the flow around the vanes of a straight infinite cascade of airfoils, resulting when the cylindrical section of the runner in question is projected into a plane. Author attempts to refer the calculation of runner vanes and their three-dimensional flow to the calculation of a straight, plane, and infinite cascade of airfoils. To this latter calculation method, the well-known singularity method is applied, in which the airfoils are replaced by a continuous distribution of vortex and source sinks. Furthermore, a source is arranged at each inlet edge of blade, thereby attaining a round shape of the inlet edge. At first the mean line of the airfoil in cascade is calculated. The second step investigates the profile form.

For the calculation the following will be assumed as existing: Distance of the airfoils t, vane length l, maximum thickness δ rounding-off radius at the inlet edge ρ, angle at the trailing edge θ, and the mean flow without cascade of airfoils w_∞. The calcu-

Etinberg, I.E.

lation is conducted according to the method of successive approximations, whereby the speeds produced by the airfoils in cascade were taken from design charts. In calculating the induced speeds of the isolated airfoil, the local curvature of the mean line is to be considered closely.

Reviewer comments that the process is an approximate, however sufficiently exact, calculation method of the plane, straight, and infinite cascade of airfoils. The application of the method in calculating the form of the vanes of Kaplan runners is entirely groundless and hardly permissible for the following reasons. (1) In the runner of the Kaplan turbine, radial speeds cannot be avoided [Strscheletzky, "Significance of the radial speed component in the runner of Kaplan turbines," *Vouth-Konstruktion und Forschung* no. 1, 1955]. (2) The flow around the vanes of an axial flow runner is not equivalent to a two-dimensional flow through a straight, plane, and infinite cascade of airfoils [AMR 5, Rev. 3205].

The application of this method for calculating Kaplan runners, having usually a few vanes and rather small hub ratios may lead under some circumstances to considerable errors. The designer who intends to calculate Kaplan turbine runners on the basis of this method must rely fully on expensive tests.

M. Strscheletzky, Germany

ETINBERG, I.E.

KOLTON, A.Yu., kand. tekhn. nauk; ETINBERG, I.E., kand. tekhn. nauk.

Investigation and development of a high-speed adjustable-blade runner. [Trudy] LMZ no.4:5-18 '57. (MIRA 11:4)
(Hydraulic turbines)

124-58-6-6685

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 6, p 54 (USSR)

AUTHOR: Etinberg, I. E.

TITLE: On the Pressure Losses in the Runners of Variable-pitch-blade Turbines (K voprosu o poteryakh napora v rabochikh kolesakh povorotnolopastnykh turbin)

PERIODICAL: V sb.: Gidroturbostroyeniye. Vol 4. Moscow-Leningrad, Mashgiz, 1957, pp 19-36

ABSTRACT: A method of evaluating the losses in the runners of variable-pitch-blade turbines is proposed, wherein experimental data obtained from model experiments are employed and wherein the coefficients obtained are referred to some mean cylindrical cross section. The profile-drag coefficient of the cascade is given by an empirical function of the lift coefficient. The changes in the losses are investigated in terms of the working conditions of the turbine and the basic geometric parameters of the runner, and the optimum flow rate and rpm resulting in a minimum loss are determined. For the purpose of illustration of the fundamental method, the experimental data of three types

Card 1/2

124-58-6-6685

On the Pressure Lossesin the Runners of Variable-pitch-blade Turbines (cont.)

of runners designed according to the method of A. F. Lesokhin, with blades pertaining to the same class, are given.

N. A. Kolokol'tsov

1. Turbine blades--Performances

Card 2/2

ETINBERG, I. E.

25(2); 10(4) PHASE I BOOK EXPLOITATION SOV/1421

Kolton, Abram Yudovich, and Isaak El'yevich Etinberg

Osnovy teorii i gidrodinamicheskogo rascheta vodyanykh turbin (Principles of Theory and Hydrodynamic Design of Hydraulic Turbines) Moscow, Mashgiz, 1958. 357 p. 3,000 copies printed.

Reviewer: L.A. Simonov, Doctor of Technical Sciences; Ed.: V.P. Gur'yev, Candidate of Technical Sciences; Ed. of Publishing House: Ye.K. Gofman; Tech. Ed.: R.G. Pol'skaya; Managing Ed. for Literature on the Design and Operation of Machinery (Leningrad Division, Mashgiz): F.I. Fetisov.

PURPOSE: This book is intended for designers and researchers in the field of hydraulic machinery building and may also be used by students specializing in power-machinery building.

COVERAGE: The book deals with problems of hydrodynamics related to hydraulic reaction turbines. Basic theoretical principles and modern methods of hydrodynamic design for various types of turbines are presented. In preparing the material the authors utilized the valuable experience of LMZ (Leningrad Metal Works) and followed,

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in general, the approach developed by I.N. Voznesenskiy, A.F. Lesokhin, and L.A. Simonov. Use was made of experimental work, done by the hydraulic turbine laboratory of the Leningrad Metal Works and research done by VIGM (All-Union Institute of Hydraulic-machinery Building), the Leningrad Polytechnic Institute imeni Kalinin, and the Moscow Higher Technical School imeni N.Ye. Bauman. Chapters I,V,VI, and VIII were written by I.E. Etinberg, and Chapters II,III,IV,VII and IX by A.Yu. Kolton. The authors thank personnel of the design department and laboratory of the Leningrad Metal Works and their supervisor N.N. Kovalev, Corresponding Member of the Academy of Sciences, USSR, for valuable assistance in preparing the book. There are 40 references, 39 of which are Soviet, and 1 English.

TABLE OF CONTENTS:

87962
S/114/60/000/007/002/009
E073/E435

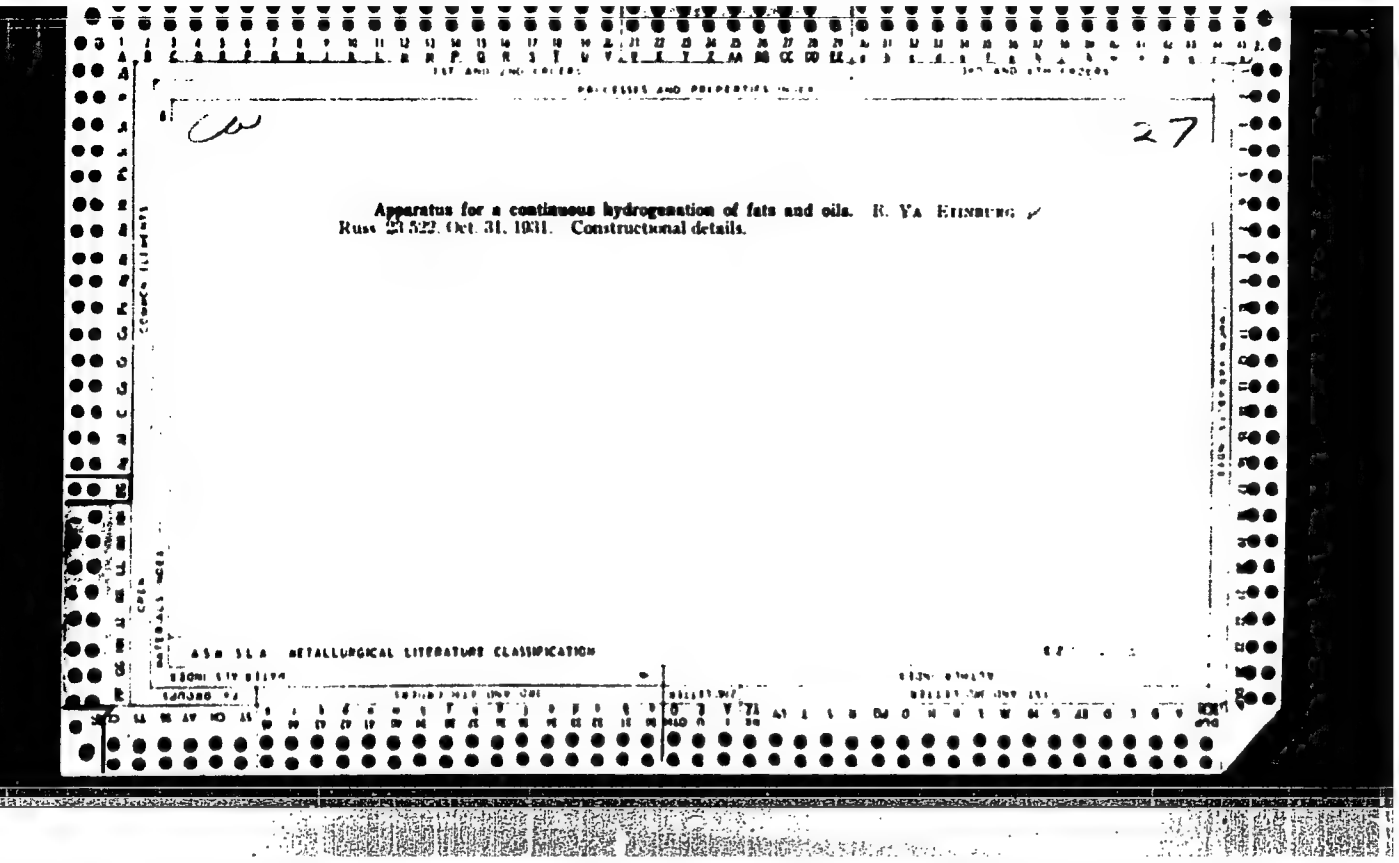
Means of Improving the Cavitational Properties of High-Pressure Kaplan Turbines

addition to this, work should proceed on the basis of new concepts, for instance on using diagonal turbines, 2-stage runners and runners with two blades on a single bearing. The advantage of a diagonal turbine is the increase in the flow cross-section, which is obtained without increasing the size of the stator parts. The under-pressure under the runner of a diagonal turbine is lower and, therefore, the cavitation coefficient will also be lower. Twin blades have a more favourable runner hub to throat ratio. Furthermore, the blades are thinner and the lattice is denser, as a result of which they are more favourable from the cavitation point of view. Two-stage turbines can be advantageous under specific conditions but they can definitely not be considered as a universal solution. There are 3 figures, 1 table and 5 Soviet references.

Card 2/2

ETINBERG, I.E.; GUTOVSKIY, Ye.V., kand. tekhn. nauk, retsenzent;
EDEL', Yu.U., doktor tekhn. nauk, red.

[Theory and design of the blading of adjustable-blade hydraulic turbines] Teoriia i raschet protochnoi chasti povorotnolopastnykh gidroturbin. Moskva, Mashinostroenie, 1965. 349 p. (MIRA 18:5)

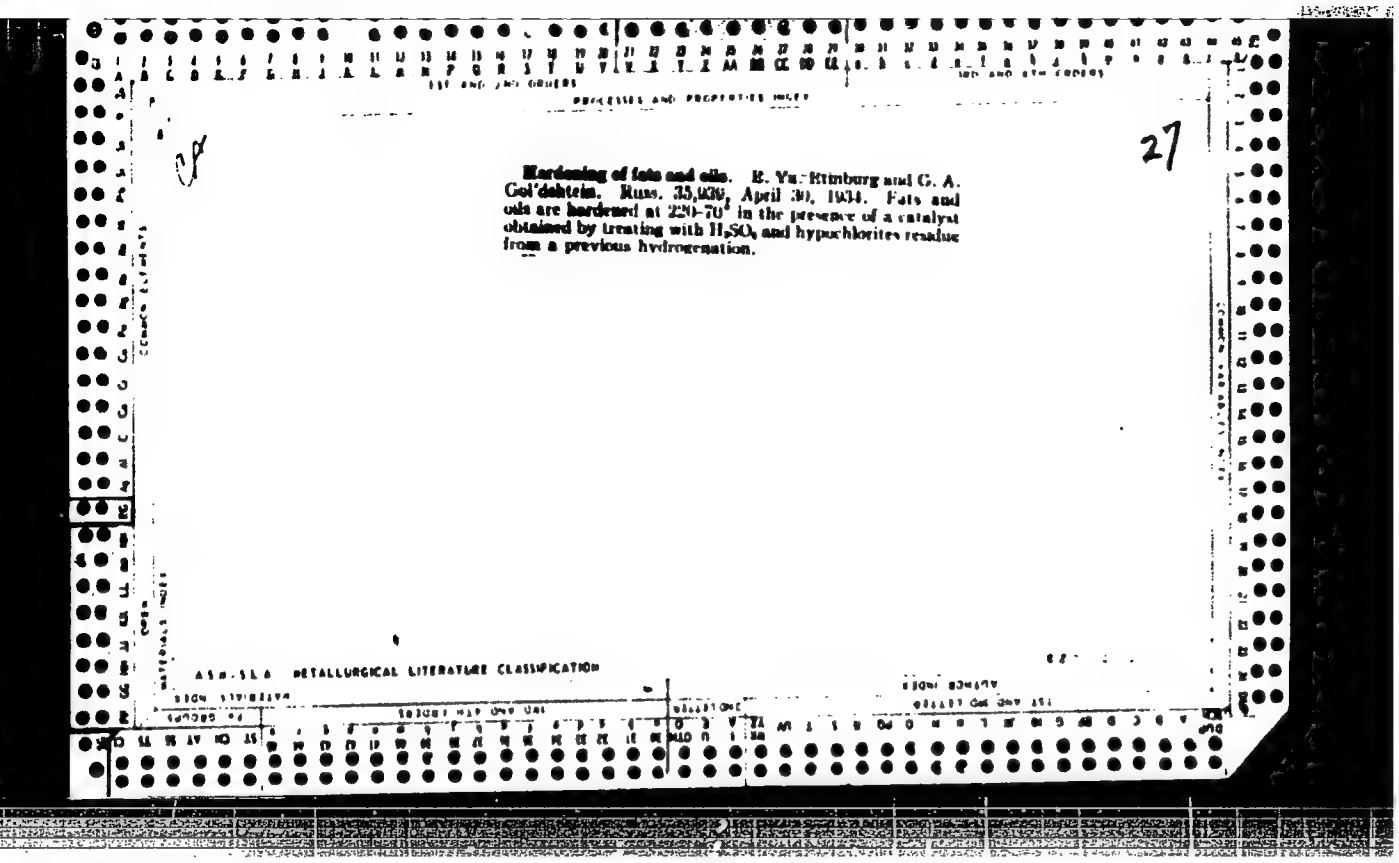


Cw

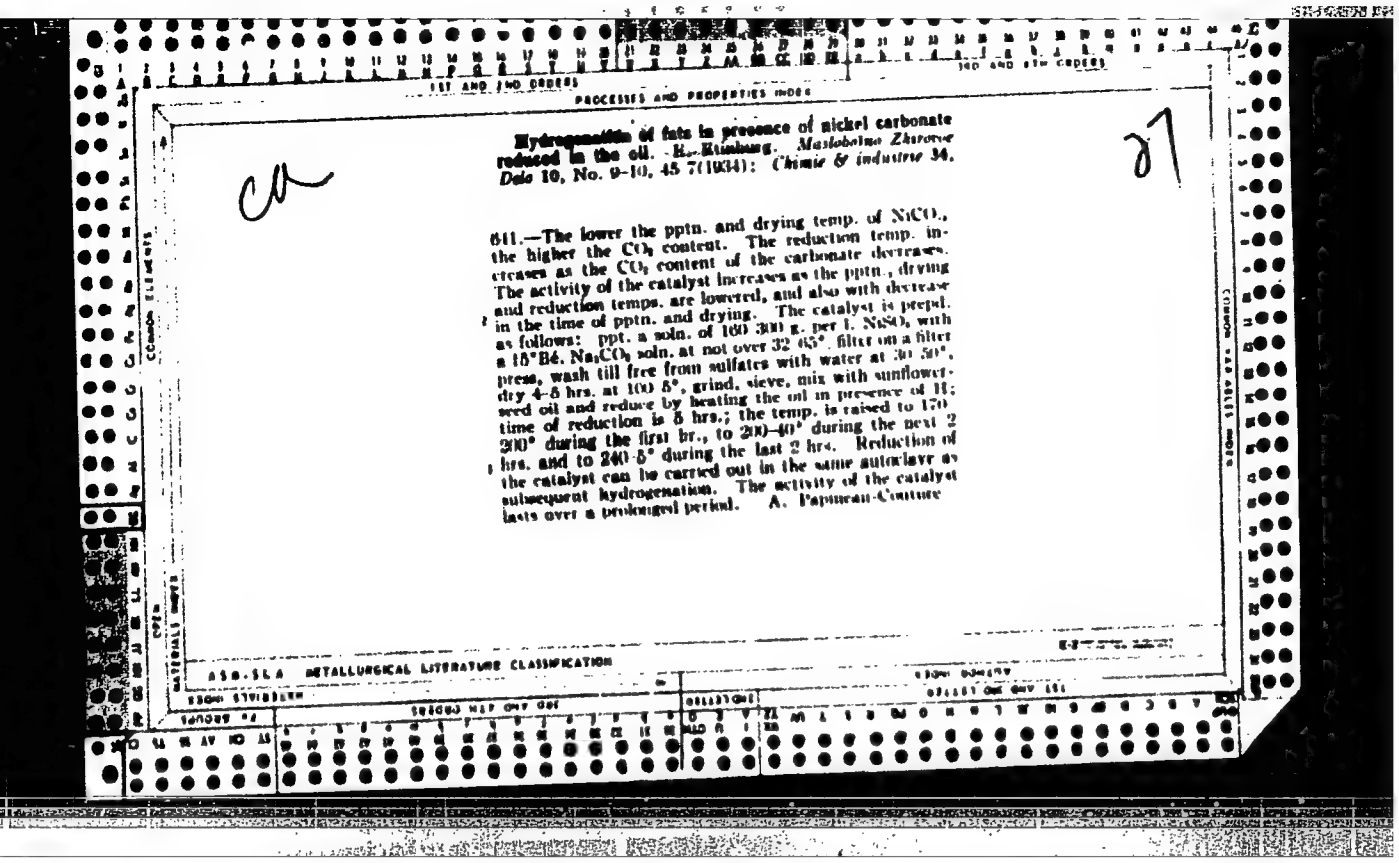
27

Apparatus for a continuous hydrogenation of fats and oils. R. Ya Etinburg. Russ 21,522, Oct. 31, 1931. Constructional details.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



Hardening of fats and oils. E. Yu. Rimburg and G. A. Gol'dshtein. Russ. 35,939, April 30, 1934. Fats and oils are hardened at 220–70° in the presence of a catalyst obtained by treating with H_2SO_4 and hypochlorites residue from a previous hydrogenation.

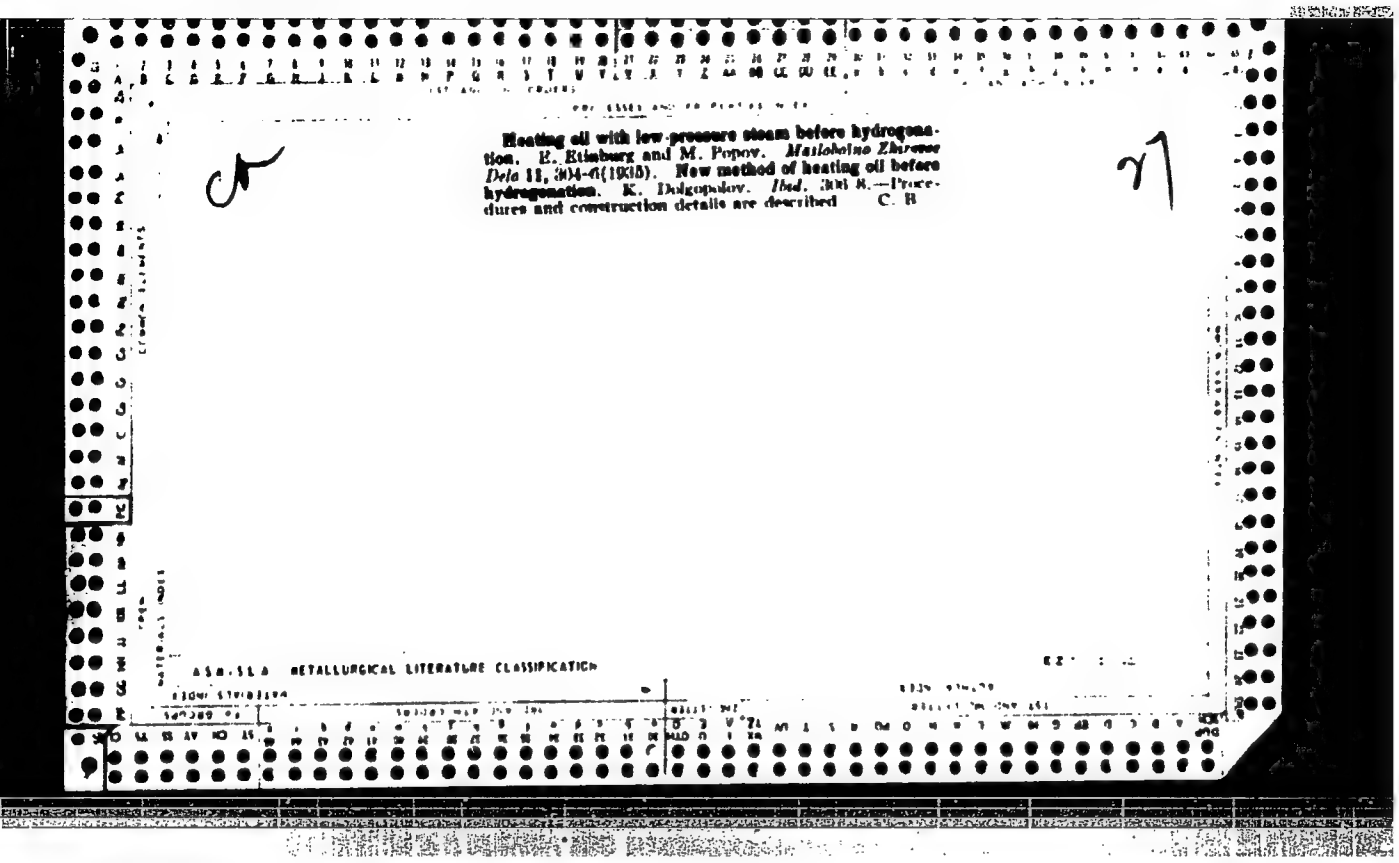


PROCESSES AND PROPERTIES INDEX

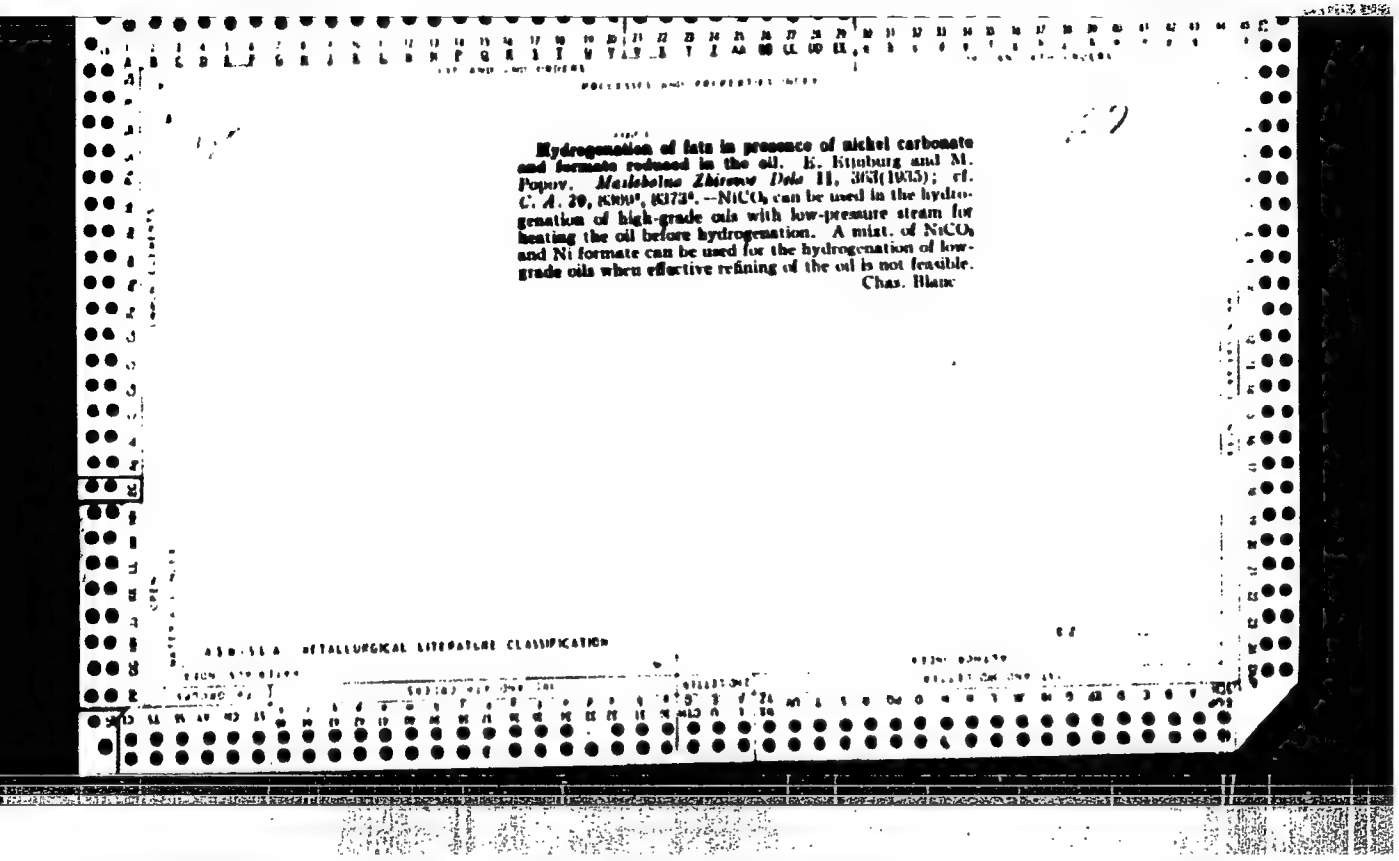
Hydrogenation of fats in presence of nickel carbonate reduced in the oil. - E. Rimbaug. *Maslobeino Zhirovoe Delo* 10, No. 9-10, 45-7(1934); *Chimie & industrie* 34,

841.—The lower the pptn. and drying temp. of $NiCO_3$, the higher the CO_2 content. The reduction temp. increases as the CO_2 content of the carbonate decreases. The activity of the catalyst increases as the pptn., drying and reduction temps. are lowered, and also with decrease in the time of pptn. and drying. The catalyst is prepd. as follows: ppt. a soln. of 160-300 g. per l. $NiSO_4$ with a 18° Bé. Na_2CO_3 soln. at not over 32-65°, filter on a filter press, wash till free from sulfates with water at 30-50°, dry 4-8 hrs. at 100-5°, grind, sieve, mix with sunflower-seed oil and reduce by heating the oil in presence of H_2; time of reduction is 8 hrs.; the temp. is raised to 170-200° during the first hr., to 200-40° during the next 2 hrs. and to 240-5° during the last 2 hrs. Reduction of the catalyst can be carried out in the same autoclave as subsequent hydrogenation. The activity of the catalyst lasts over a prolonged period. A. Papineau-Couture

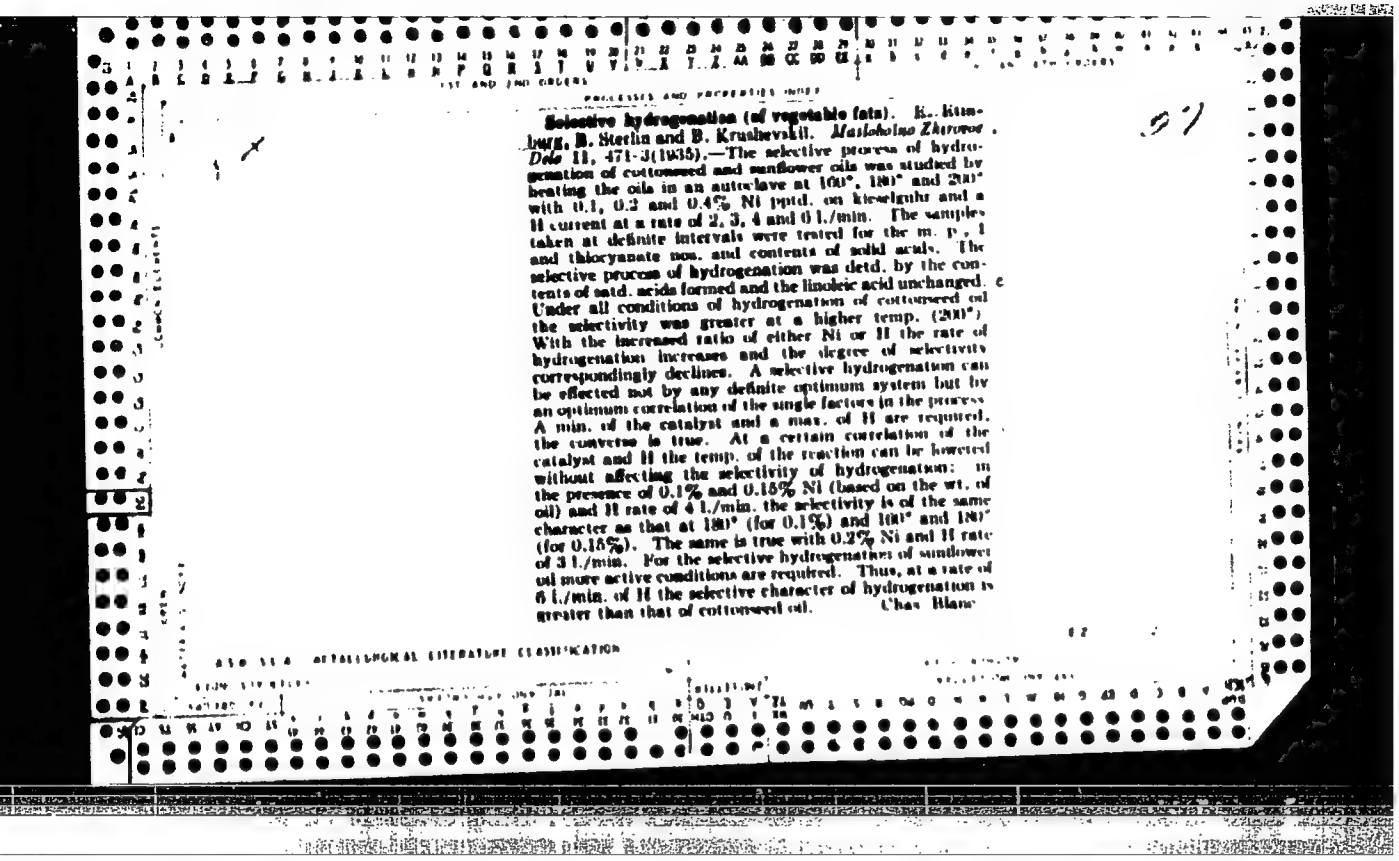
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



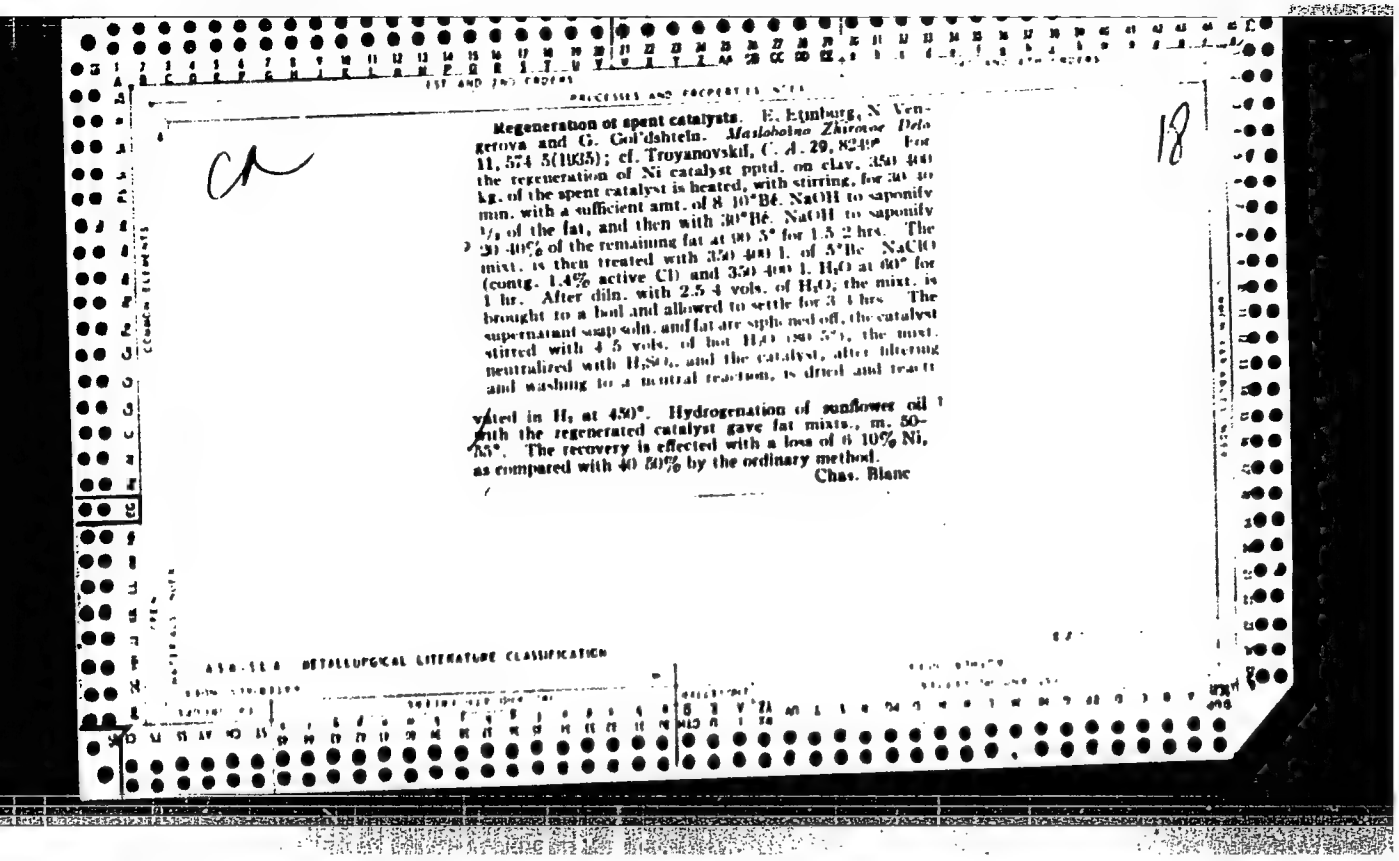
Heating oil with low-pressure steam before hydrogenation. E. Etinburg and M. Popov. *Maslobolno Zhirovoe Dela* **11**, 304-6(1935). **New method of heating oil before hydrogenation.** K. Dolgopolov. *Ibid.* 306 8.—Procedures and construction details are described C. B



Hydrogenation of fats in presence of nickel carbonate and formate reduced in the oil. E. Rtutburg and M. Popov. *Maslobelno Zhirovo Delo* **11**, 363(1935); cf. *C. A.* **29**, 8300⁸, 8373⁶.—$NiCO_3$ can be used in the hydrogenation of high-grade oils with low-pressure steam for heating the oil before hydrogenation. A mixt. of $NiCO_3$ and Ni formate can be used for the hydrogenation of low-grade oils when effective refining of the oil is not feasible.
Chas. Blanc

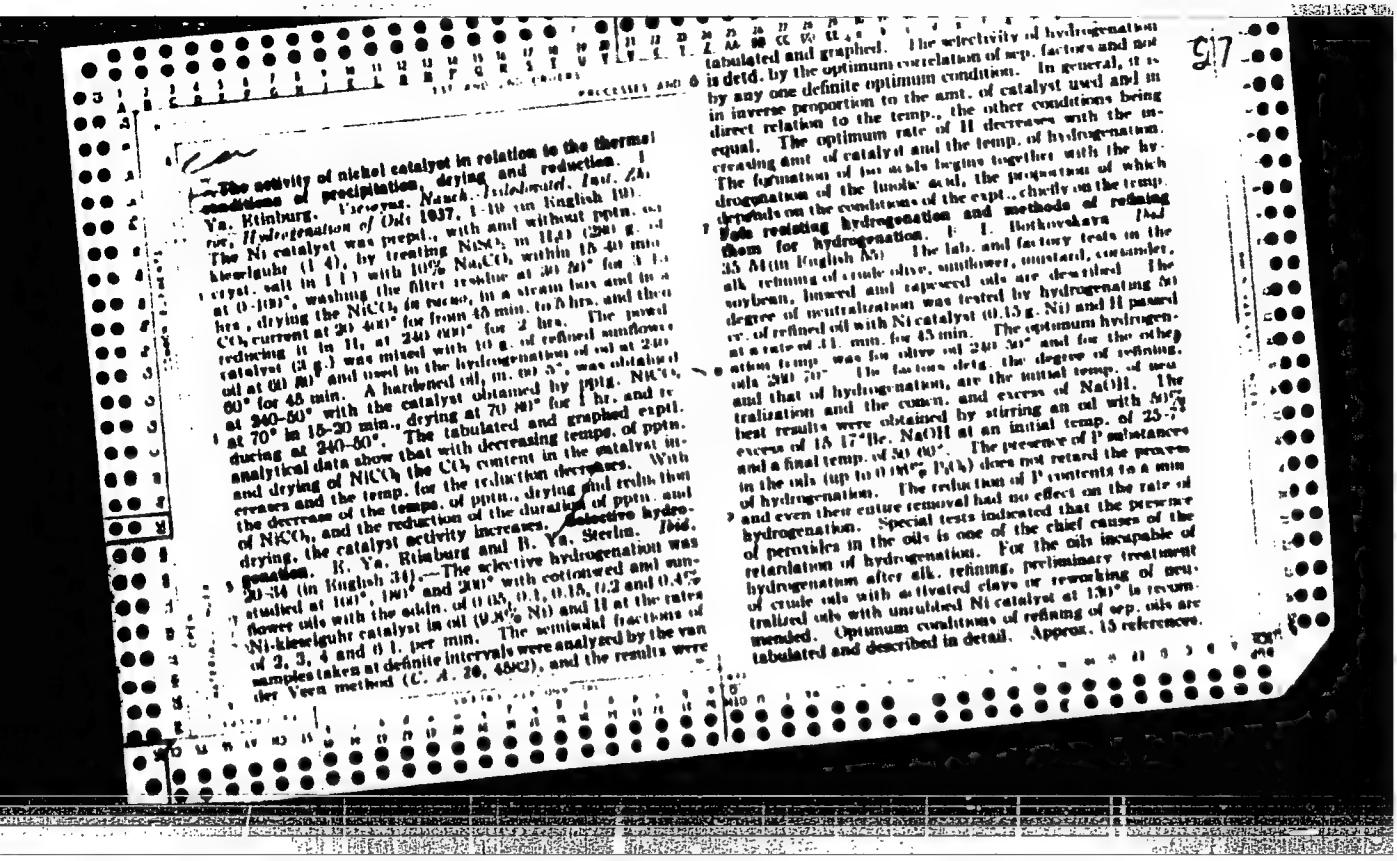


Selective hydrogenation (of vegetable fats). K. Kitaigurg, B. Stetlin and B. Krushevskii. *Maslobolno Zhirovoe Delo* 11, 471-3(1935).—The selective process of hydrogenation of cottonseed and sunflower oils was studied by heating the oils in an autoclave at 160°, 180° and 200° with 0.1, 0.2 and 0.4% Ni ppitd. on kieselguhr and a H current at a rate of 2, 3, 4 and 6 l./min. The samples taken at definite intervals were tested for the m. p., I and thiocyanate nos. and contents of solid acids. The selective process of hydrogenation was detd. by the contents of satd. acids formed and the linoleic acid unchanged. Under all conditions of hydrogenation of cottonseed oil the selectivity was greater at a higher temp. (200°). With the increased ratio of either Ni or H the rate of hydrogenation increases and the degree of selectivity correspondingly declines. A selective hydrogenation can be effected not by any definite optimum system but by an optimum correlation of the single factors in the process. A min. of the catalyst and a max. of H are required, the converse is true. At a certain correlation of the catalyst and H the temp. of the reaction can be lowered without affecting the selectivity of hydrogenation: in the presence of 0.1% and 0.15% Ni (based on the wt. of oil) and H rate of 4 l./min. the selectivity is of the same character as that at 181° (for 0.1%) and 160° and 180° (for 0.15%). The same is true with 0.2% Ni and H rate of 3 l./min. For the selective hydrogenation of sunflower oil more active conditions are required. Thus, at a rate of 6 l./min. of H the selective character of hydrogenation is greater than that of cottonseed oil. Chas. Blanc

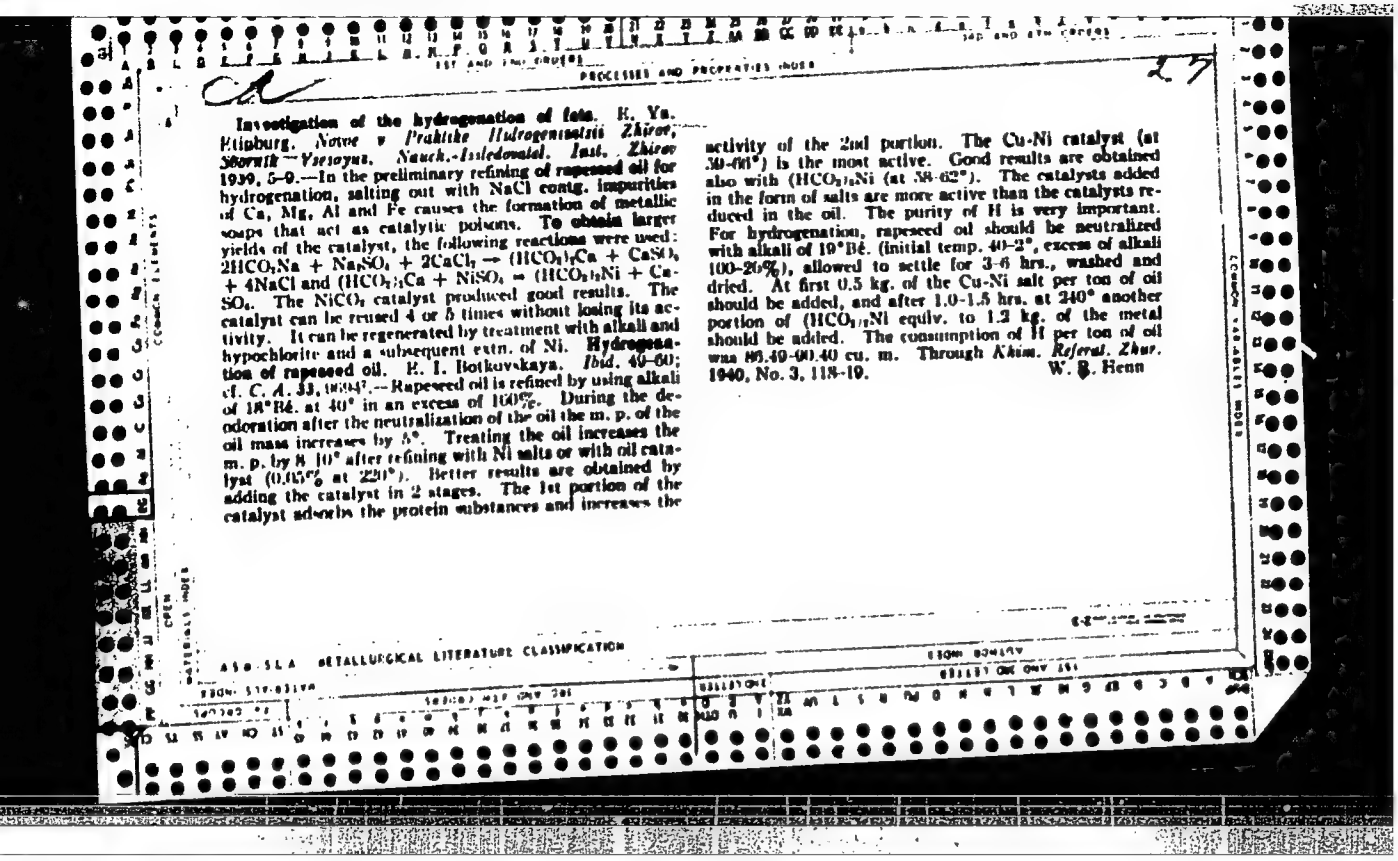


Regeneration of spent catalysts. E. Eimburg, N Vengerova and G. Gol'dshtein. *Maslobolno Zhirovoe Delo* 11, 574 5(1935); cf. Troyanovskii, *C. A.* 29, 8249. For the regeneration of Ni catalyst ppted. on clay, 350 400 kg. of the spent catalyst is heated, with stirring, for 30 40 min. with a sufficient amt. of 8 10°Bé. NaOH to saponify ⅓ of the fat, and then with 30°Bé. NaOH to saponify 30 40% of the remaining fat at 90 5° for 1.5 2 hrs. The mixt. is then treated with 350 400 l. of 5°Bé. NaClO (contg. 1.4% active Cl) and 350 400 l. H_2O at 60° for 1 hr. After diln. with 2.5 4 vols. of H_2O, the mixt. is brought to a boil and allowed to settle for 3 4 hrs. The supernatant soap soln. and fat are siphoned off, the catalyst stirred with 4 5 vols. of hot H_2O (80 5°), the mixt. neutralized with H_2SO_4, and the catalyst, after filtering and washing to a neutral reaction, is dried and reactivated in H_2 at 450°. Hydrogenation of sunflower oil with the regenerated catalyst gave fat mixts., m. 50–55°. The recovery is effected with a loss of 6 10% Ni, as compared with 40 50% by the ordinary method.

Chas. Blanc



The activity of nickel catalyst in relation to the thermal conditions of precipitation, drying and reduction. I Ya. Rinburg. Uspekhi Nauch.-Issledovatel. Inst. Zh. ire, Hydrogenation of Oils 1937, 1-10 (in English 10). The Ni catalyst was prepd., with and without pptn. as khevelguhr (1:4), by treating $NiSO_4$ in H$_2$O (200 g. cryst. salt in 1 l.) with 10% Na_2CO_3 within 15-40 min. at 0-10°, washing the filter residue at 20-30° for 3-14 hrs., drying the $NiCO_3$ in vacuo, in a stream hot air and in a CO_2 current at 20-40° for from 45 min. to 5 hrs. and then reducing it in H_2 at 240-300° for 2 hrs. The most catalyst (2 g.) was mixed with 10 g. of refined sunflower oil at 60-80° and used in the hydrogenation of oil at 240-60° for 45 min. A hardened oil, m. (0) 55°, was obtained at 240-50° with the catalyst obtained by pptg. $NiCO_3$ at 70° in 15-20 min., drying at 70-80° for 1 hr. and reducing at 240-50°. The tabulated and graphed expt. analytical data show that with decreasing temps. of pptn. and drying of $NiCO_3$ the CO_2 content in the catalyst increases and the temp. for the reduction decreases. With the decrease of the temps. of pptn., drying and reduction of $NiCO_3$ and the reduction of the duration of pptn. and drying, the catalyst activity increases. Selective hydrogenation. B. Ya. Rinburg and B. Ya. Sterlin. Ibid. 20-34 (in English 34).—The selective hydrogenation was studied at 160°, 180° and 200° with cottonseed and sunflower oils with the catalyst of 0.05, 0.1, 0.15, 0.2 and 0.4% Ni-kieselguhr catalyst in oil (9.8% Ni) and H at the rates of 2, 3, 4 and 6 l. per min. The semiolid fractions of samples taken at definite intervals were analyzed by the van der Vern method (C. A. 26, 4862), and the results were tabulated and graphed. The selectivity of hydrogenation is detd. by the optimum correlation of sep. factors and not by any one definite optimum condition. In general, it is in inverse proportion to the amt. of catalyst used and in direct relation to the temp., the other conditions being equal. The optimum rate of H decreases with the increasing amt. of catalyst and the temp. of hydrogenation. The formation of iso acids begins together with the hydrogenation of the linoleic acid, the proportion of which depends on the conditions of the expt., chiefly on the temp. Oils resisting hydrogenation and methods of refining them for hydrogenation. I. I. Bolkovskaya. Ibid. 35-41 (in English 41). The lab. and factory tests in the alk. refining of crude olive, sunflower, mustard, cucumber, soybean, linseed and rapeseed oils are described. The degree of neutralization was tested by hydrogenating 50 cc. of refined oil with Ni catalyst (0.15 g. Ni) and H passed at a rate of 4 l. per min. for 45 min. The optimum hydrogenation temp. was for olive oil 240-50° and for the other oils 200-70°. The factors detg. the degree of refining and that of hydrogenation, are the initial temp. of neutralization and the concn. and excess of NaOH. The best results were obtained by stirring an oil with 50% excess of 15-17°Be. NaOH at an initial temp. of 25-7° and a final temp. of 80-90°. The presence of P substances in the oils (up to 0.08% P_2O_5) does not retard the process of hydrogenation. The reduction of P contents to a min. and even their entire removal had no effect on the rate of hydrogenation. Special tests indicated that the presence of peroxides in the oils is one of the chief causes of the retardation of hydrogenation. For the oils incapable of hydrogenation after alk. refining, preliminary treatment of crude oils with activated clays or reworking of neutralized oils with unreduced Ni catalyst at 130° is recommended. Optimum conditions of refining of sep. oils are tabulated and described in detail. Approx. 15 references.



PROCESSES AND PREPARATIVE METHODS

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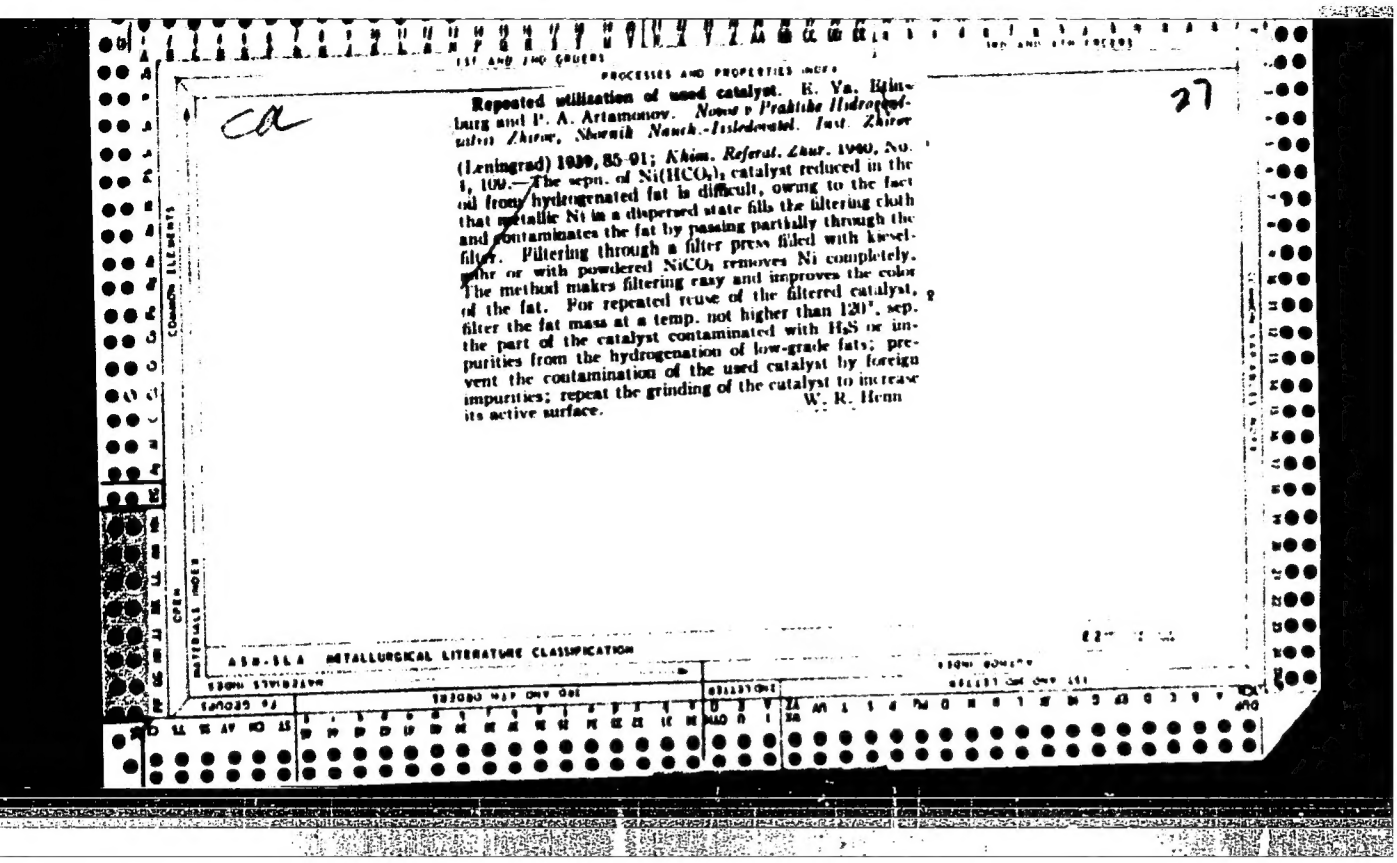
Investigation of the hydrogenation of fats. R. Ya. Ritsburg. *Novoe v Praktike Hidrogenizatsii Zhirov, Sbornik — Vsesoyus. Nauch.-Issledovatel. Inst. Zhirov* 1939, 5–9.—In the preliminary refining of rapeseed oil for hydrogenation, salting out with NaCl contg. impurities of Ca, Mg, Al and Fe causes the formation of metallic soaps that act as catalytic poisons. To obtain larger yields of the catalyst, the following reactions were used: $2HCO_3Na + Na_2SO_4 + 2CaCl_2 \rightarrow (HCO_3)_2Ca + CaSO_4 + 4NaCl$ and $(HCO_3)_2Ca + NiSO_4 \rightarrow (HCO_3)_2Ni + CaSO_4$. The $NiCO_3$ catalyst produced good results. The catalyst can be reused 4 or 5 times without losing its activity. It can be regenerated by treatment with alkali and hypochlorite and a subsequent extn. of Ni. **Hydrogenation of rapeseed oil.** R. I. Botkovskaya. *Ibid.* 49–60; cf. *C. A.* 33, 1894?.—Rapeseed oil is refined by using alkali of 18°Bé. at 40° in an excess of 150%. During the deodoration after the neutralization of the oil the m. p. of the oil mass increases by 5°. Treating the oil increases the m. p. by 8–10° after refining with Ni salts or with oil catalyst (0.05% at 220°). Better results are obtained by adding the catalyst in 2 stages. The 1st portion of the catalyst adsorbs the protein substances and increases the activity of the 2nd portion. The Cu-Ni catalyst (at 59-60°) is the most active. Good results are obtained also with $(HCO_3)_2Ni$ (at 58-62°). The catalysts added in the form of salts are more active than the catalysts reduced in the oil. The purity of H is very important. For hydrogenation, rapeseed oil should be neutralized with alkali of 19°Bé. (initial temp. 40–2°, excess of alkali 100–20%), allowed to settle for 3–6 hrs., washed and dried. At first 0.5 kg. of the Cu-Ni salt per ton of oil should be added, and after 1.0–1.5 hrs. at 240° another portion of $(HCO_3)_2Ni$ equiv. to 1.2 kg. of the metal should be added. The consumption of H per ton of oil was 86.40–90.40 cu. m. Through *Khim. Referat. Zhur.* 1940, No. 3, 118–19.

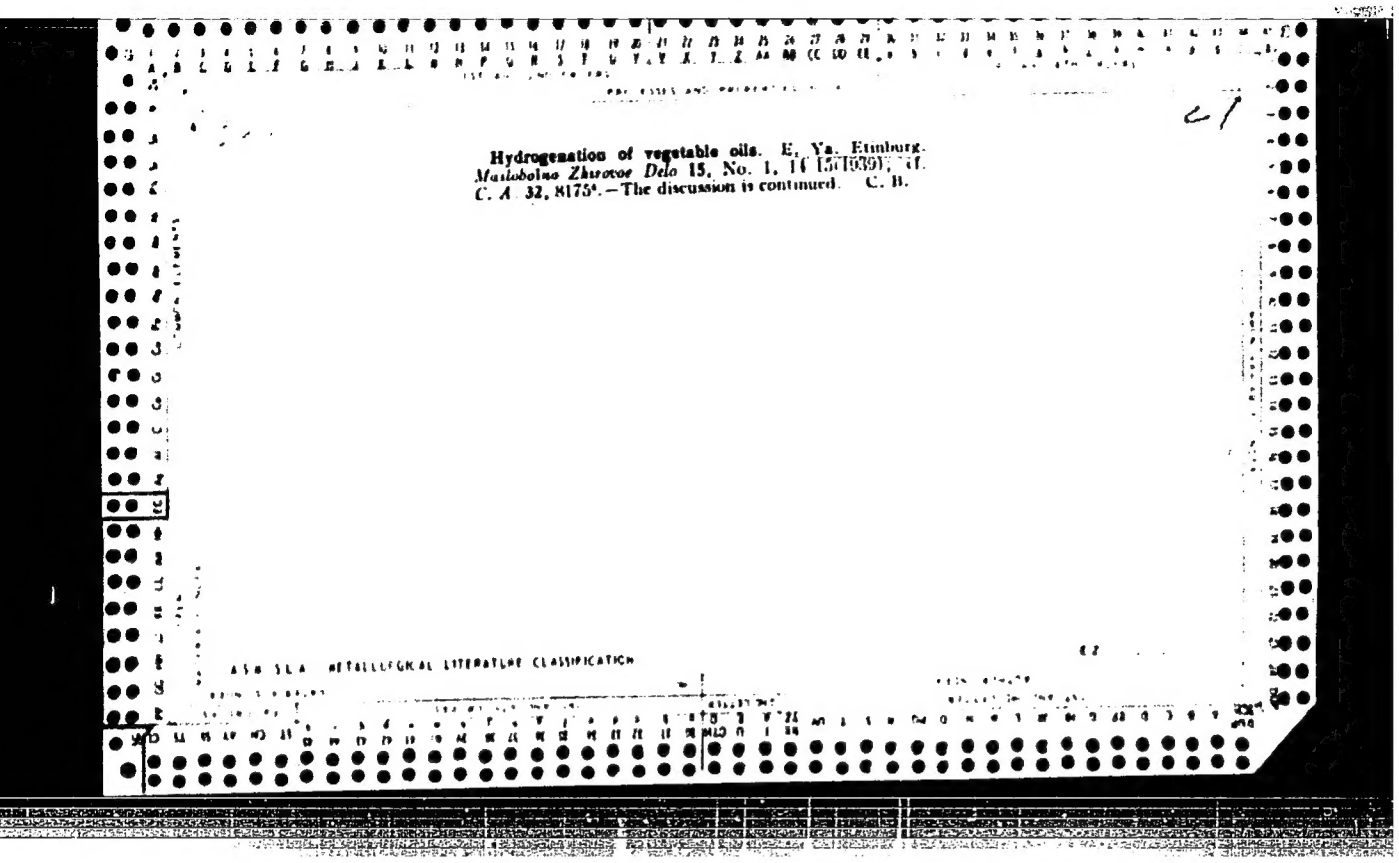
W. B. Henn

A50-SLA METALLURGICAL LITERATURE CLASSIFICATION



Repeated utilization of used catalyst. E. Ya. Rabinsburg and P. A. Artamonov. *Novosti Prakt. Gidrogenizatsii Zhirov, Sbornik Nauch.-Issledovatel. Inst. Zhirov* (Leningrad) **1939**, 85-91; *Khim. Referat. Zhur.* 1940, No. 1, 109.—The sepn. of $Ni(HCO_3)_2$ catalyst reduced in the oil from hydrogenated fat is difficult, owing to the fact that metallic Ni in a dispersed state fills the filtering cloth and contaminates the fat by passing partially through the filter. Filtering through a filter press filled with kieselguhr or with powdered $NiCO_3$ removes Ni completely. The method makes filtering easy and improves the color of the fat. For repeated reuse of the filtered catalyst, filter the fat mass at a temp. not higher than 120°, sep. the part of the catalyst contaminated with H_2S or impurities from the hydrogenation of low-grade fats; prevent the contamination of the used catalyst by foreign impurities; repeat the grinding of the catalyst to increase its active surface.

W. R. Henn



Hydrogenation of vegetable oils. E. Ya. Etinburg. *Maslobolno Zhirovoe Delo* 15, No. 1, 14 (1939); cf. *C. A.* 32, 8175⁹.—The discussion is continued. C. B.

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ETINBERG, Z. I.: KRUSHEL'NIKOVA, L. M.

Children - Diseases

Various forms of stomatitis in children and their therapy. Pediatriia, No. 4, 1952.

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Improved gas pipette for prolonged air sample gathering. Uch. zap. Mosk. nauch.-issl. inst. san. i gig. no.6:60-61 '61. (MIRA 14:11)
(AIR SAMPLING APPARATUS)